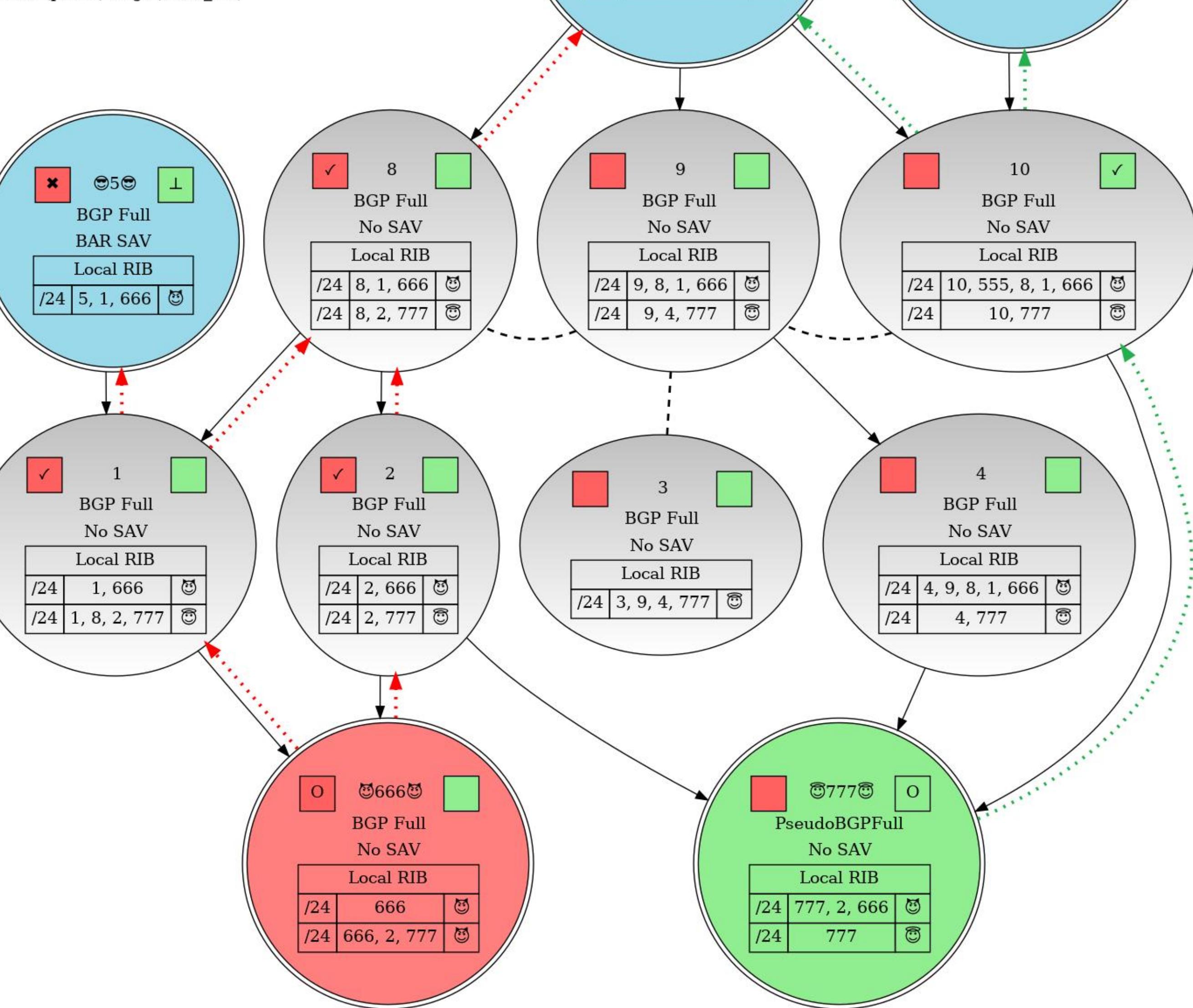


(Data Plane Outcomes)

(Attacker Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |

ROAs (prefix, origin, max_len)



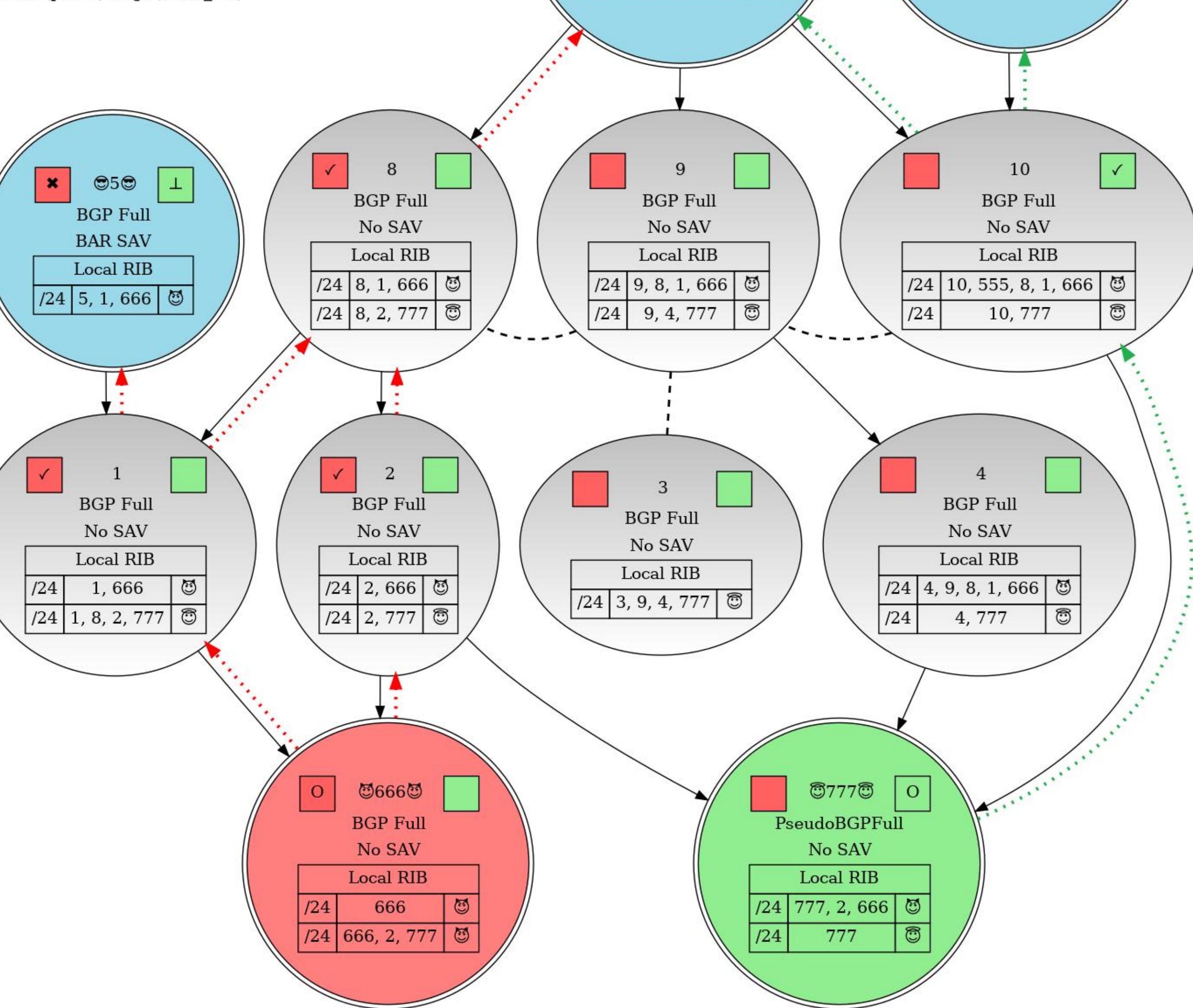
(bar_sav_000 Ground Truth)
Three reflectors running BAR SAV, one disconnected from both victim and attacker

(Data Plane Outcomes)

(Attacker Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |

ROAs (prefix, origin, max_len)



(bar_sav_000)

Three reflectors running BAR SAV, one disconnected from both victim and attacker

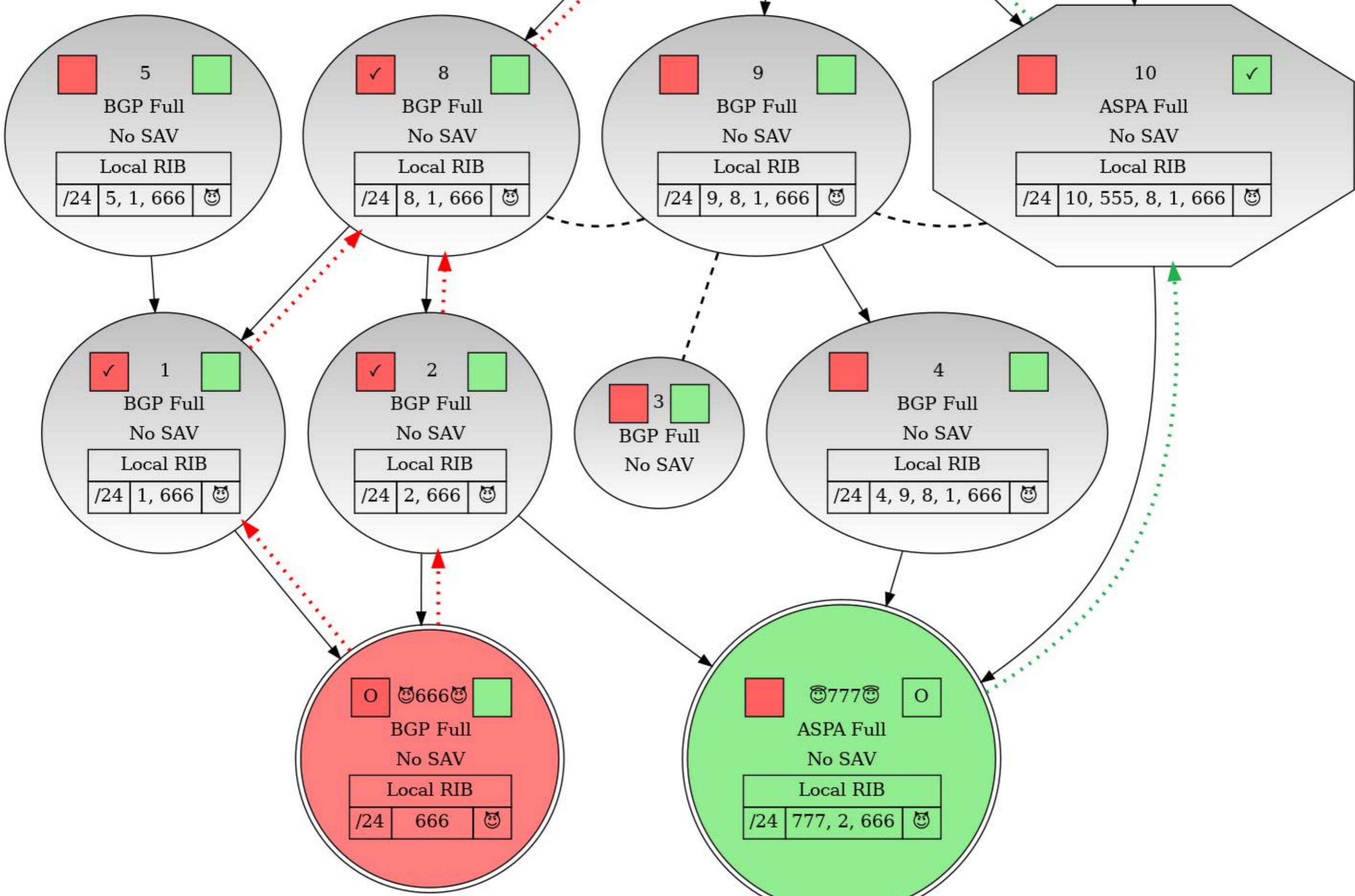
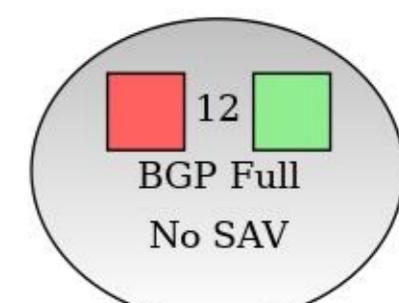
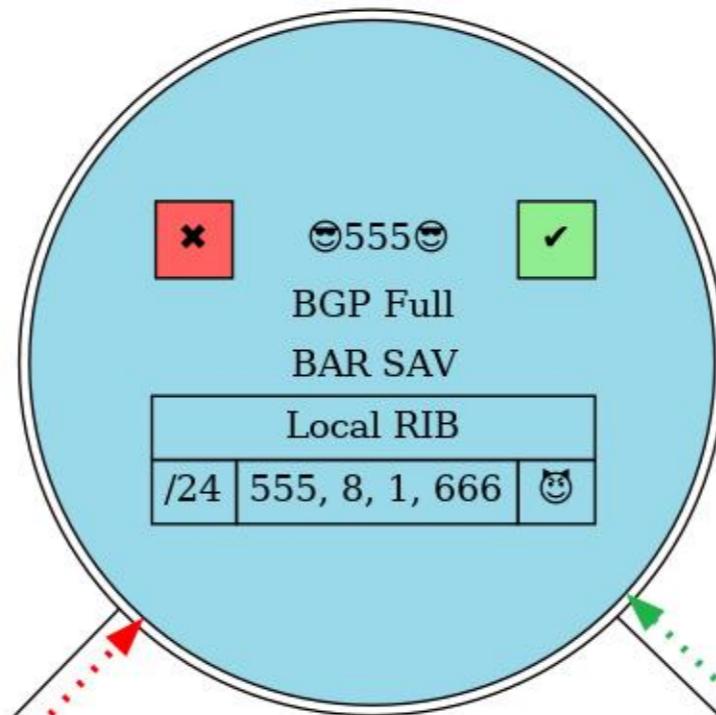
(Data Plane Outcomes)

(Attacker Outcomes)

| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
|----------------------|---|----------------------|---|
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)

| | | |
|------------|-----|----|
| 7.7.7.0/24 | 777 | 24 |
|------------|-----|----|



(bar_sav_001 Ground Truth)
Single reflector running BAR SAV, victim does not announce prefix

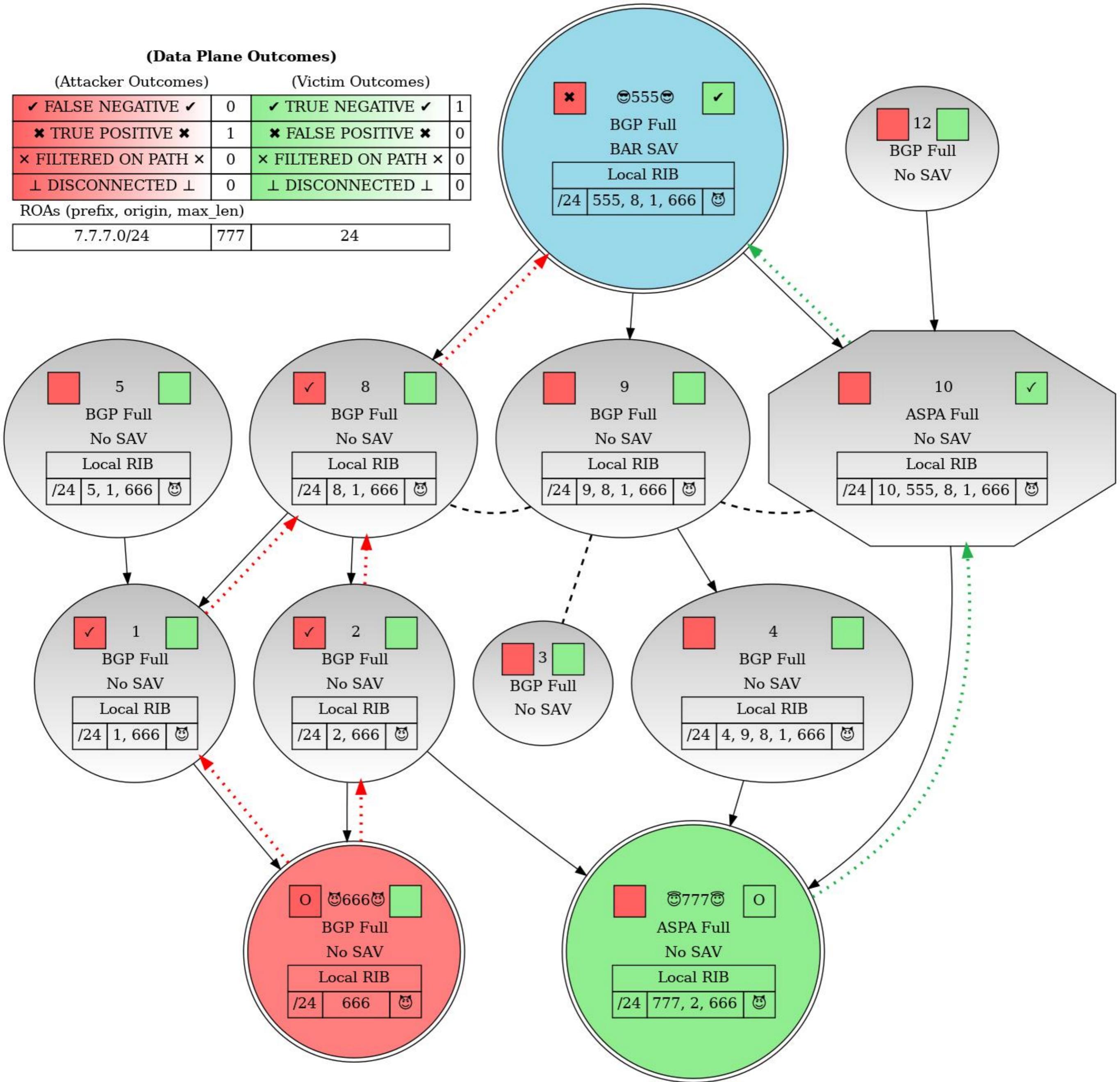
(Data Plane Outcomes)

(Attacker Outcomes)

| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
|----------------------|---|----------------------|---|
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)

| | | |
|------------|-----|----|
| 7.7.7.0/24 | 777 | 24 |
|------------|-----|----|



(bar_sav_001)
Single reflector running BAR SAV, victim does not announce prefix

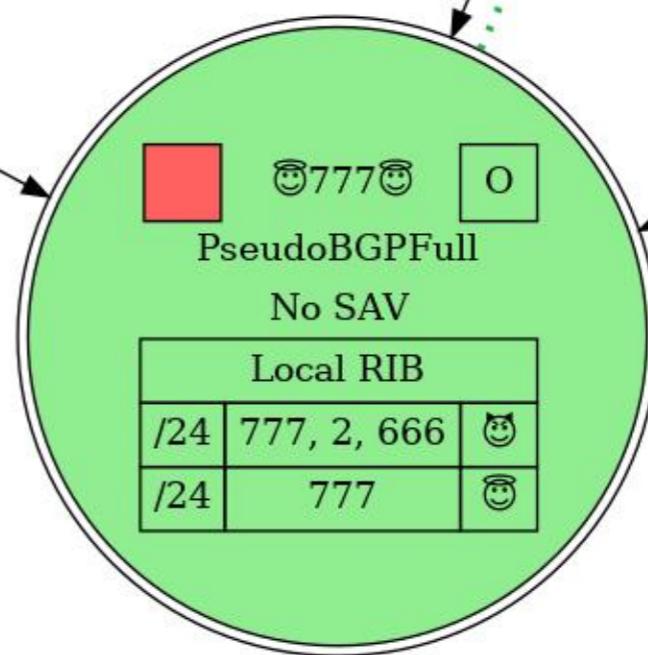
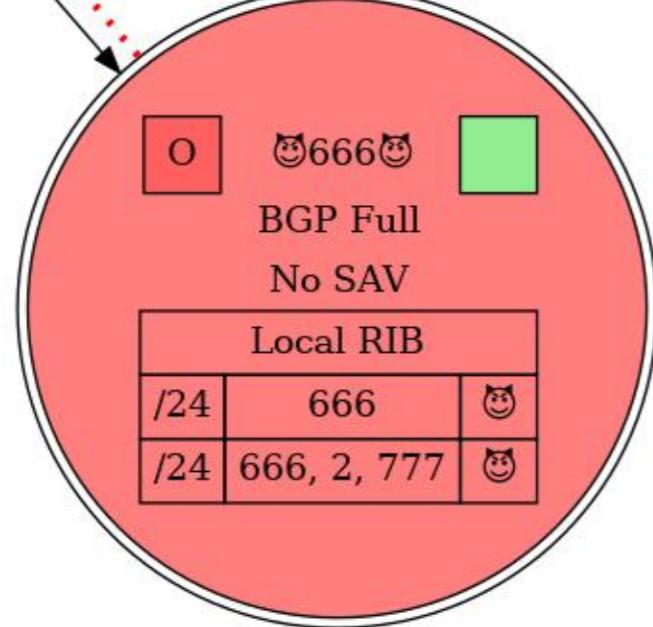
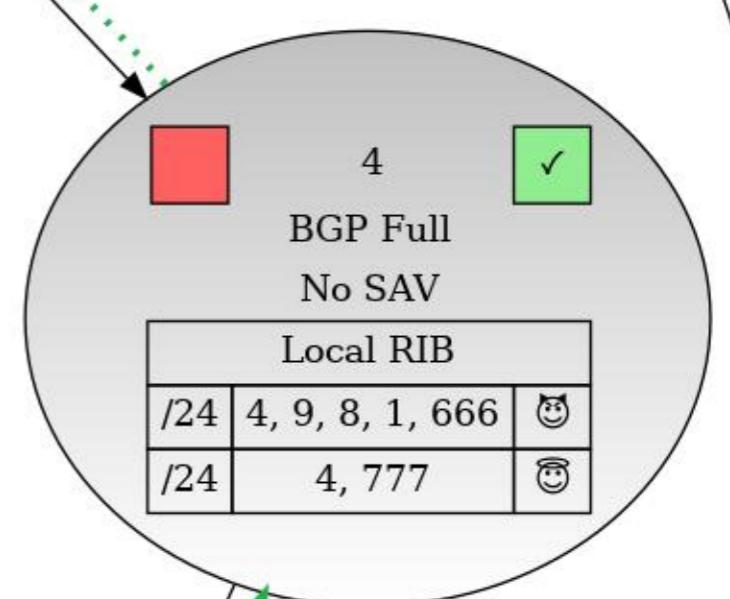
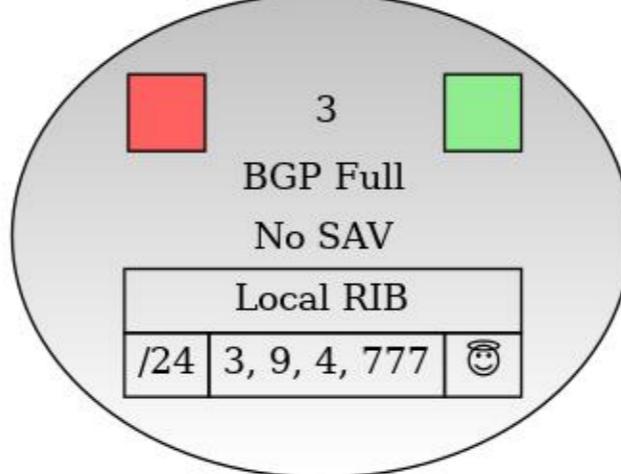
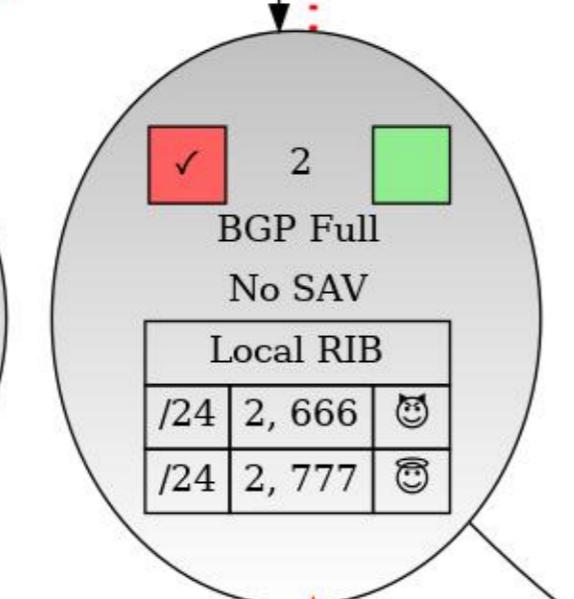
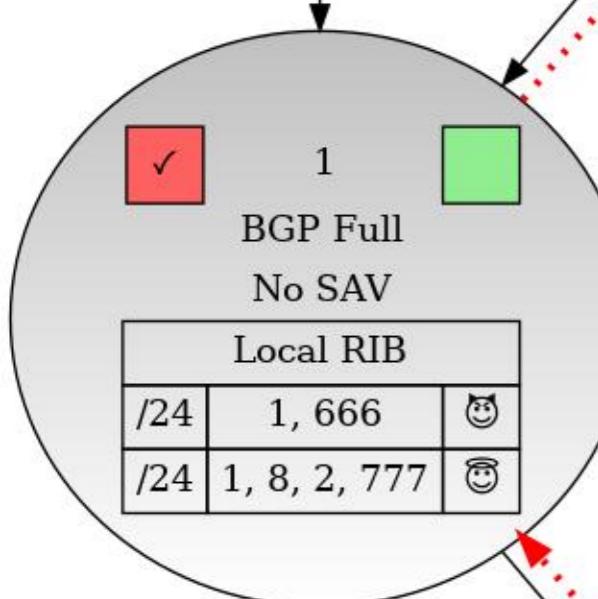
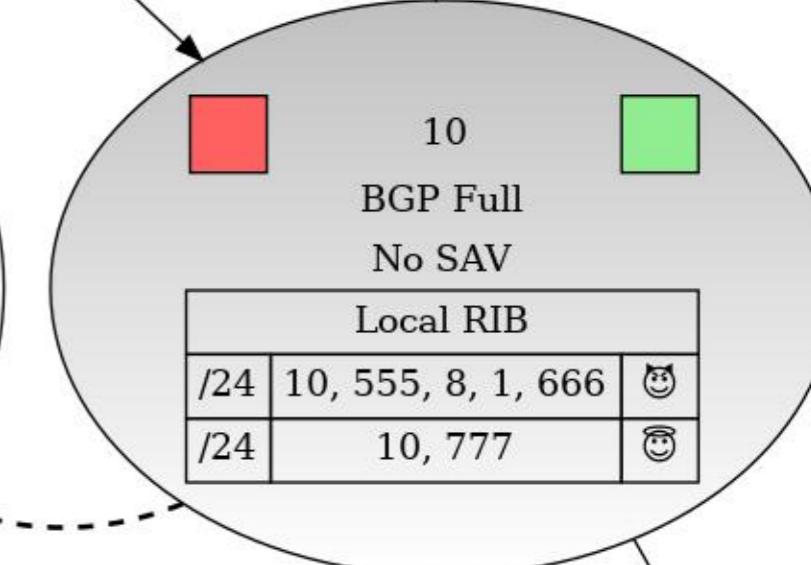
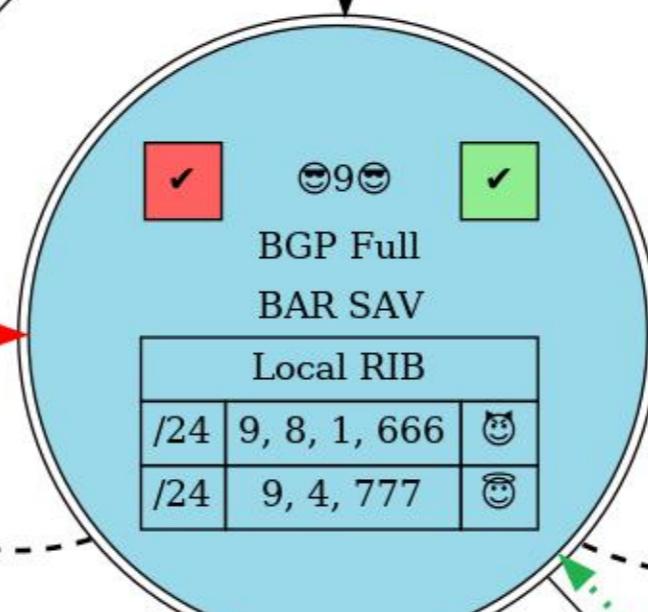
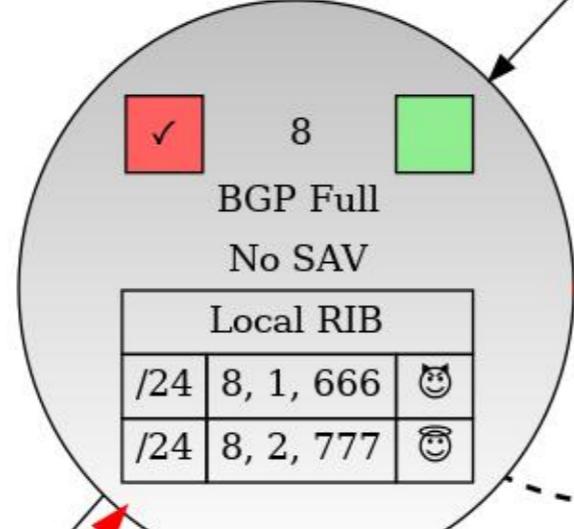
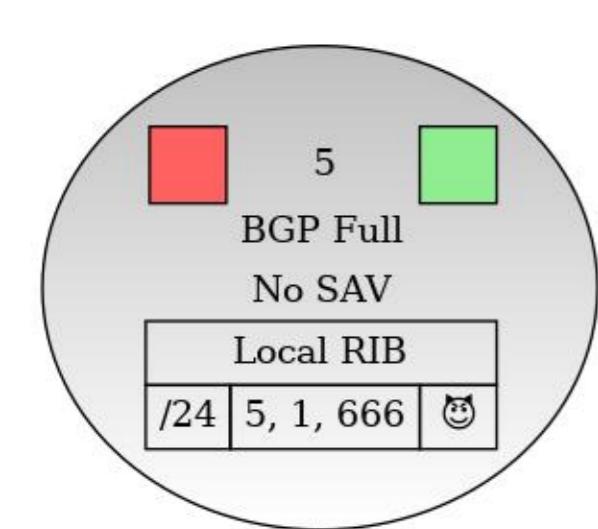
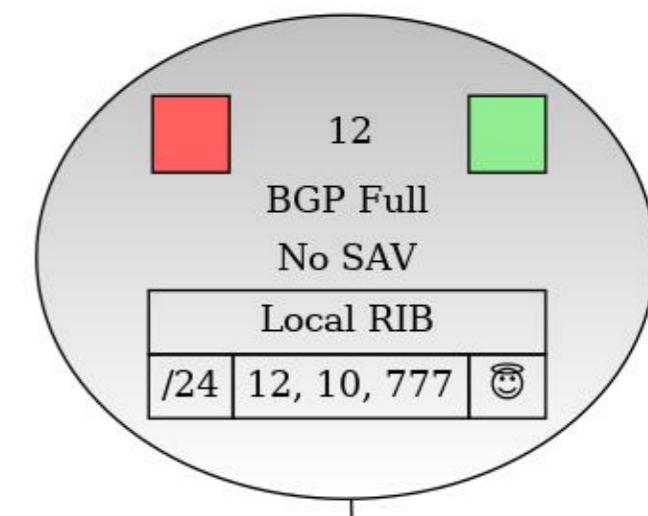
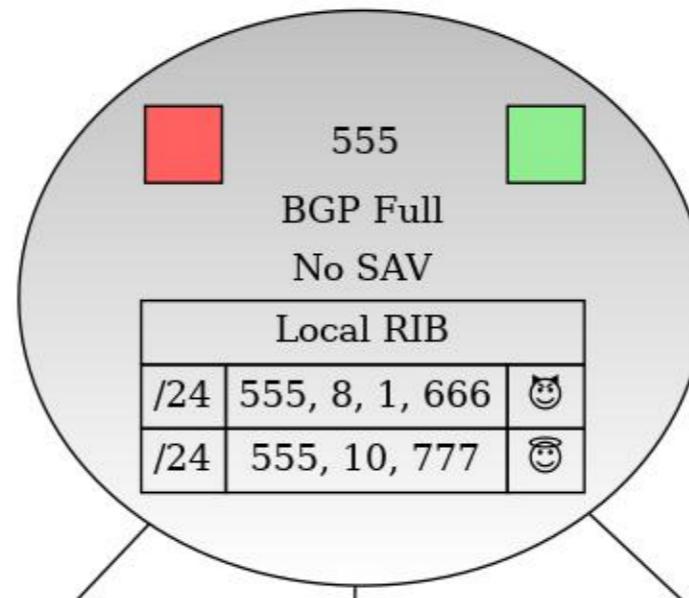
(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)



(bar_sav_002 Ground Truth)

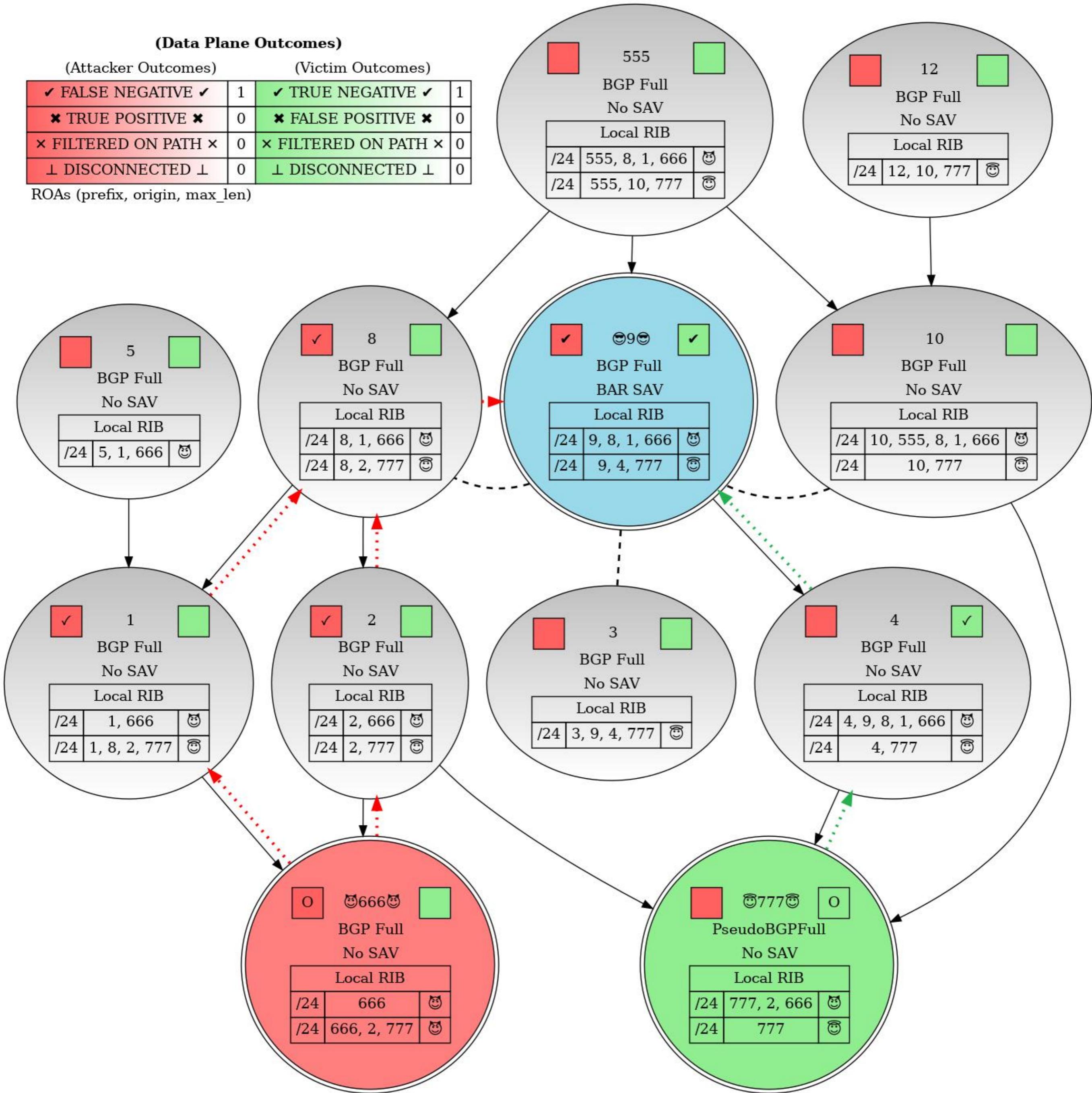
(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

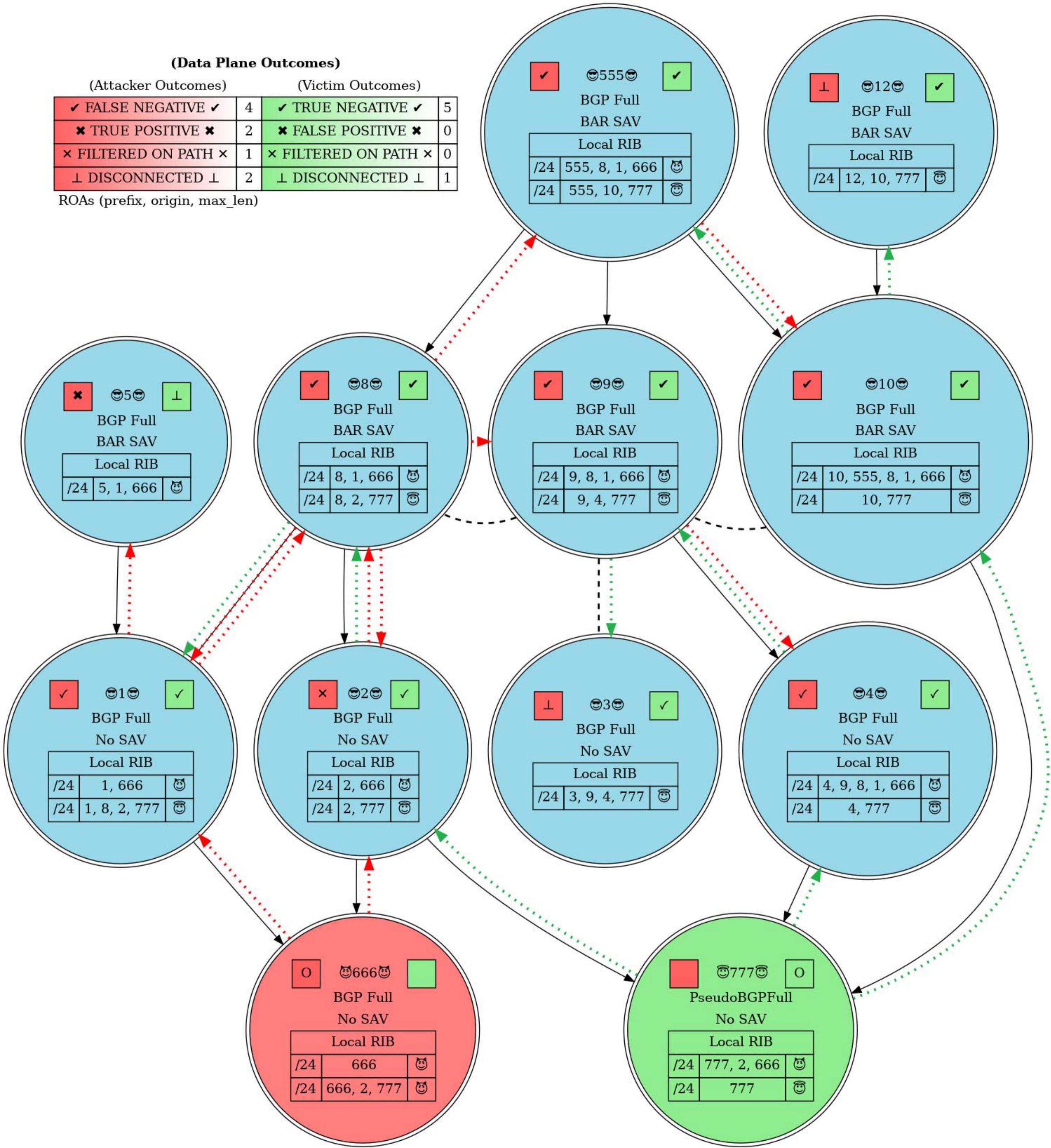
ROAs (prefix, origin, max_len)



(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 4 | ✓ TRUE NEGATIVE ✓ | 5 |
| ✗ TRUE POSITIVE ✗ | 2 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 1 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 2 | ⊥ DISCONNECTED ⊥ | 1 |

ROAs (prefix, origin, max_len)

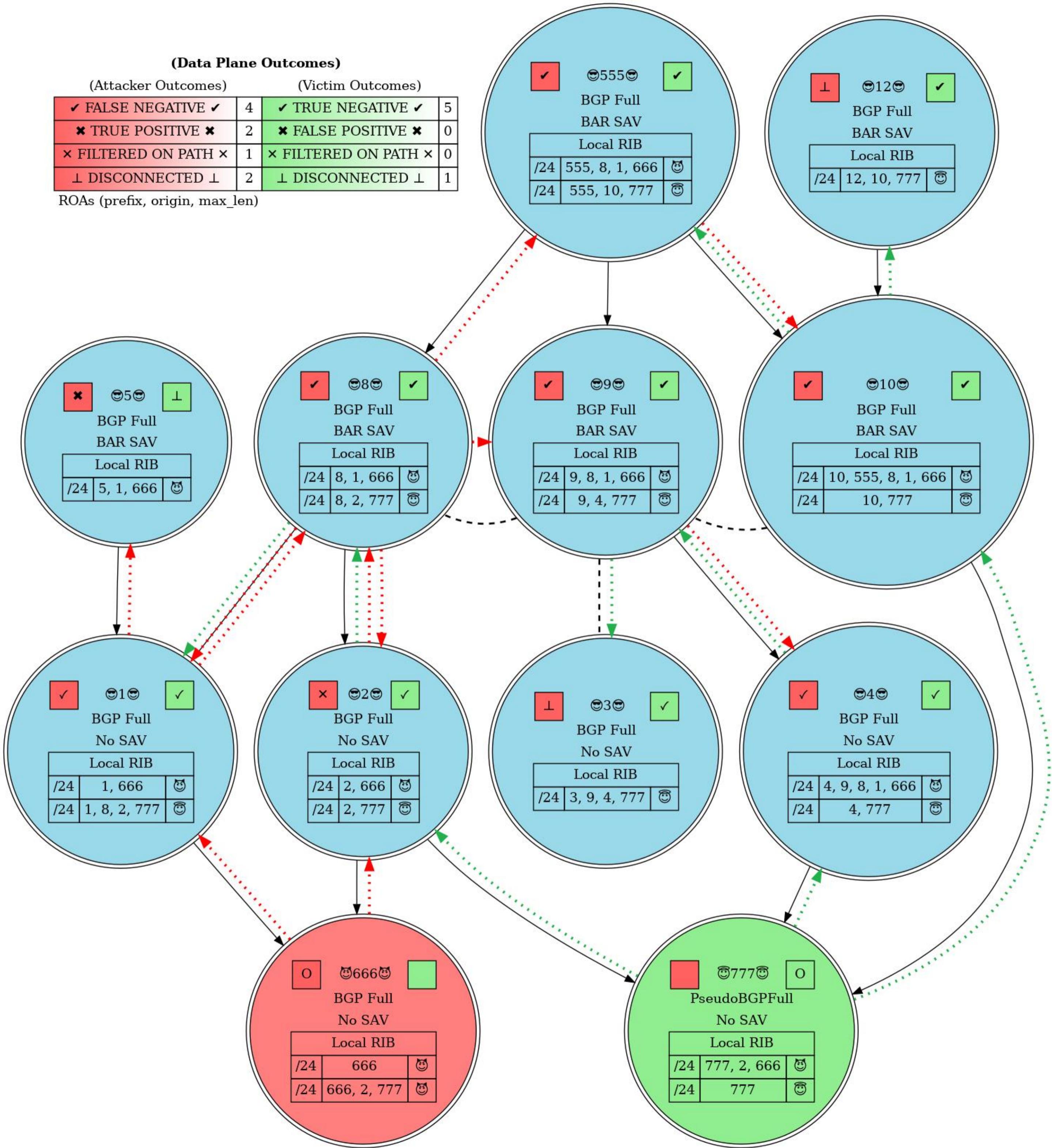


(bar_sav_003 Ground Truth)

(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 4 | ✓ TRUE NEGATIVE ✓ | 5 |
| ✗ TRUE POSITIVE ✗ | 2 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 1 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 2 | ⊥ DISCONNECTED ⊥ | 1 |

ROAs (prefix, origin, max_len)



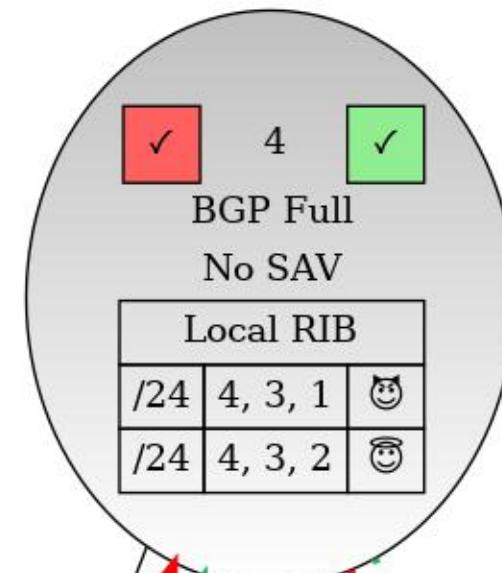
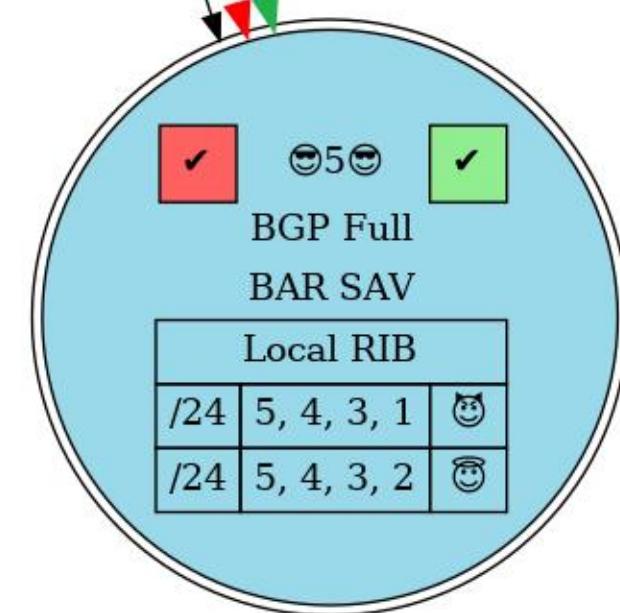
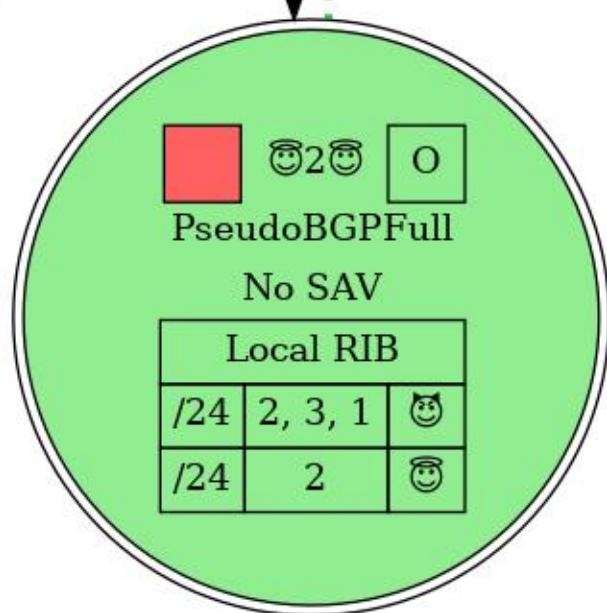
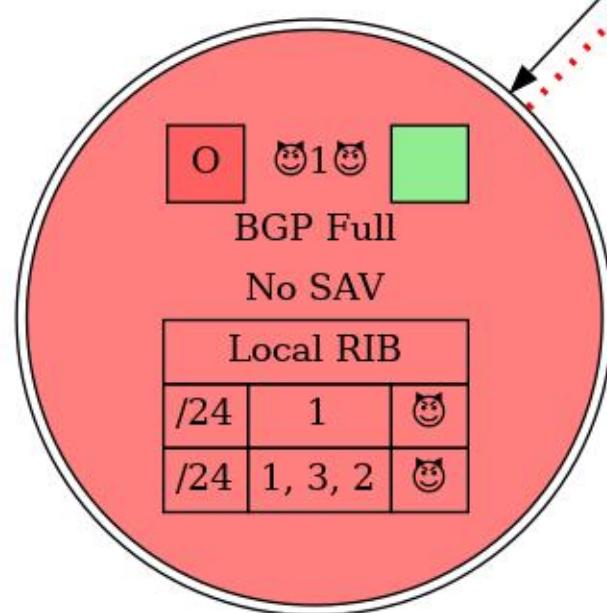
(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)



(bar_sav_004 Ground Truth)

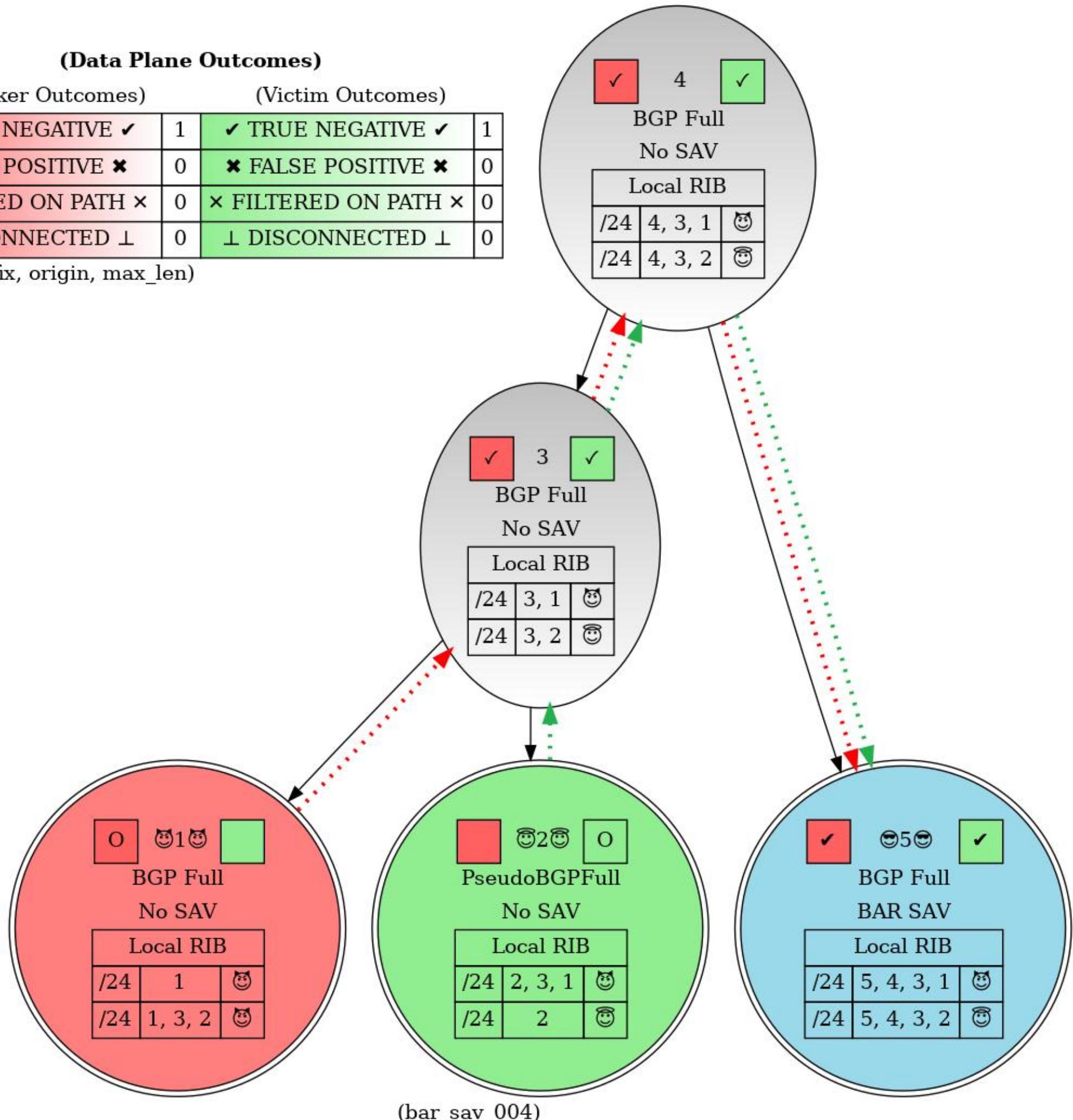
(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)

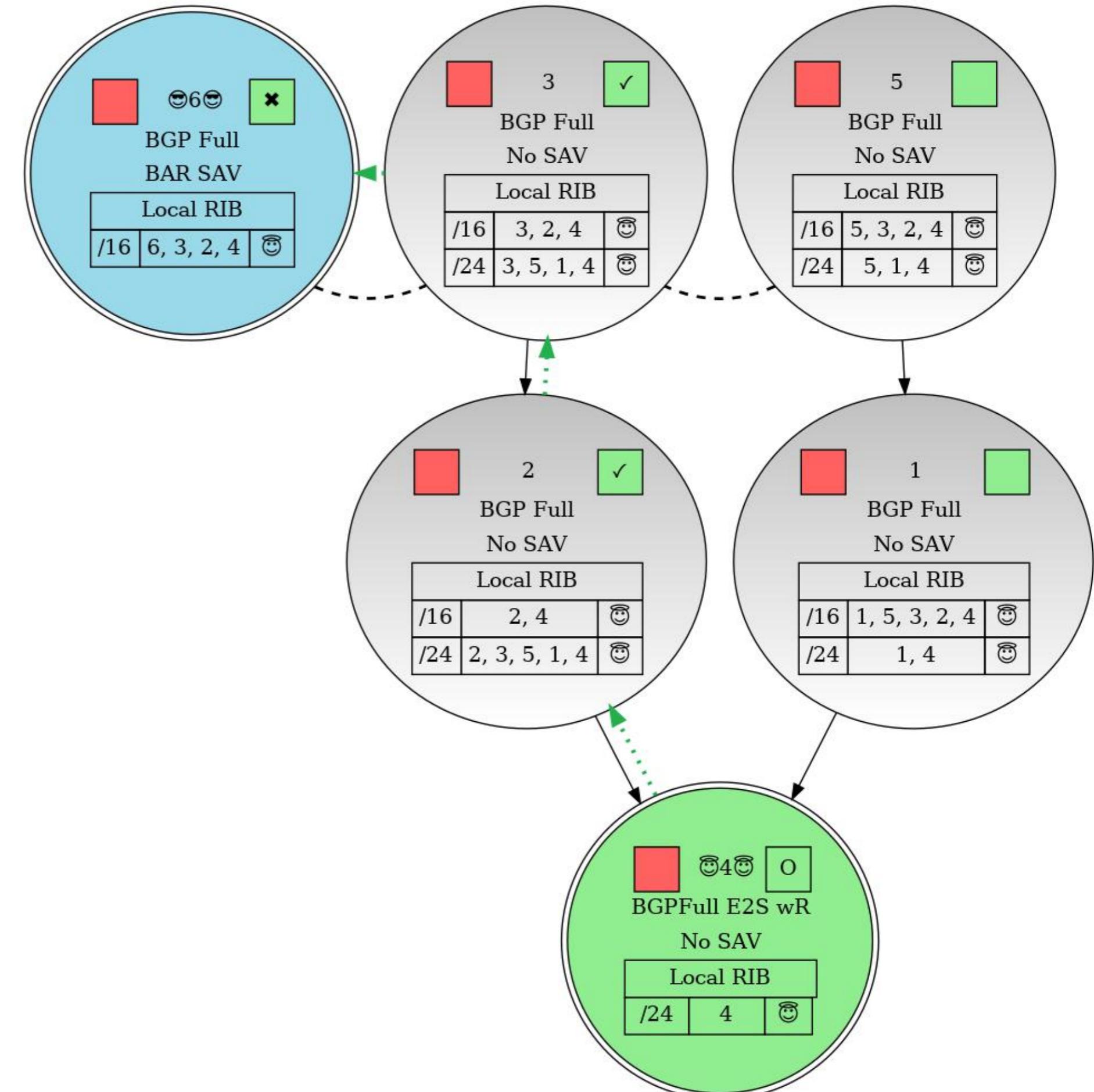


(Data Plane Outcomes)

(Attacker Outcomes)

| | (Victim Outcomes) | | |
|----------------------|-------------------|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 0 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)



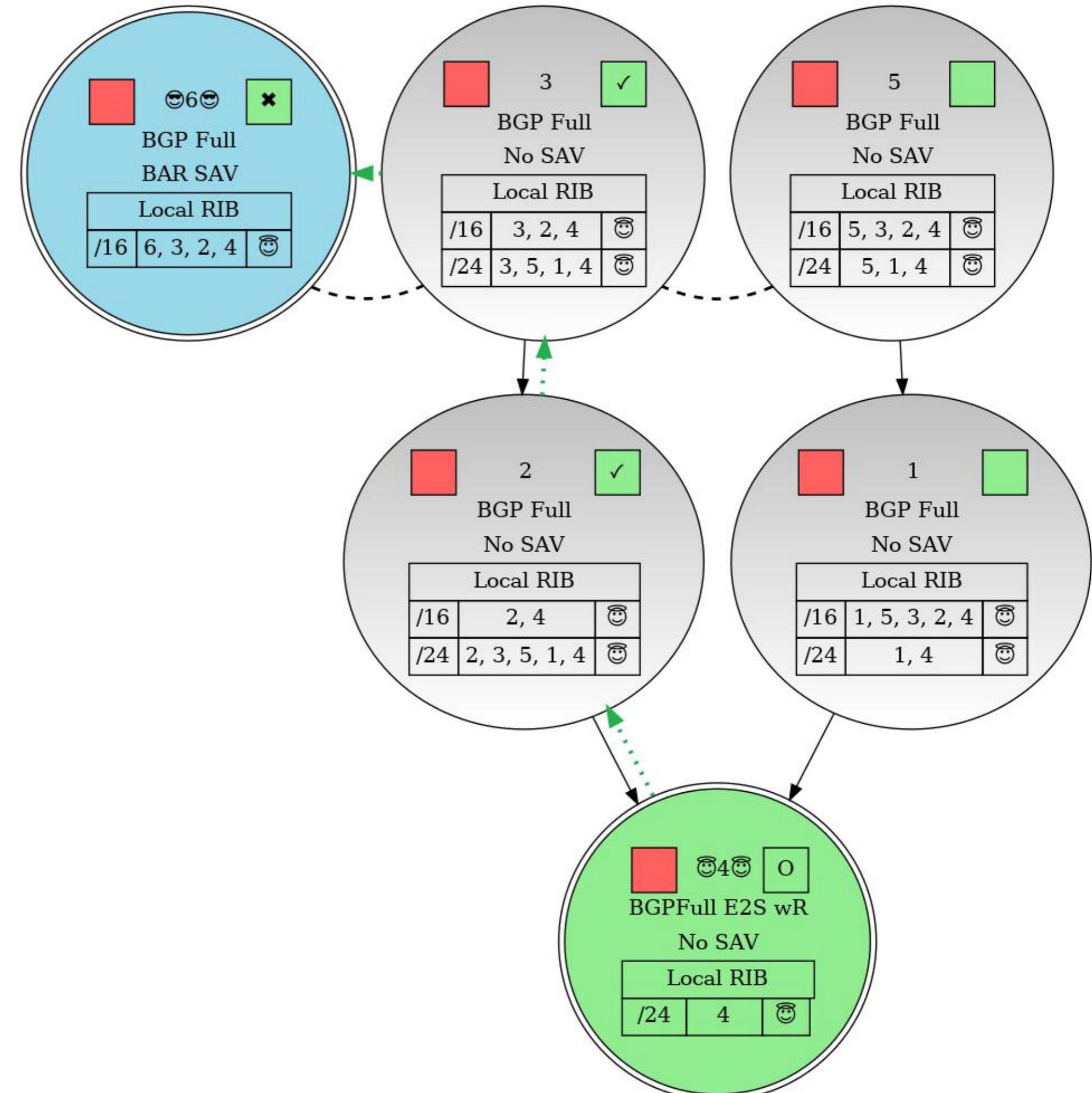
(bar_sav_005 Ground Truth)
BAR SAV False Positive Test No ROA

(Data Plane Outcomes)

(Attacker Outcomes)

| | (Victim Outcomes) | |
|----------------------|--------------------|------------------------|
| | ✓ FALSE NEGATIVE ✓ | ✓ TRUE NEGATIVE ✓ |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ 0 |

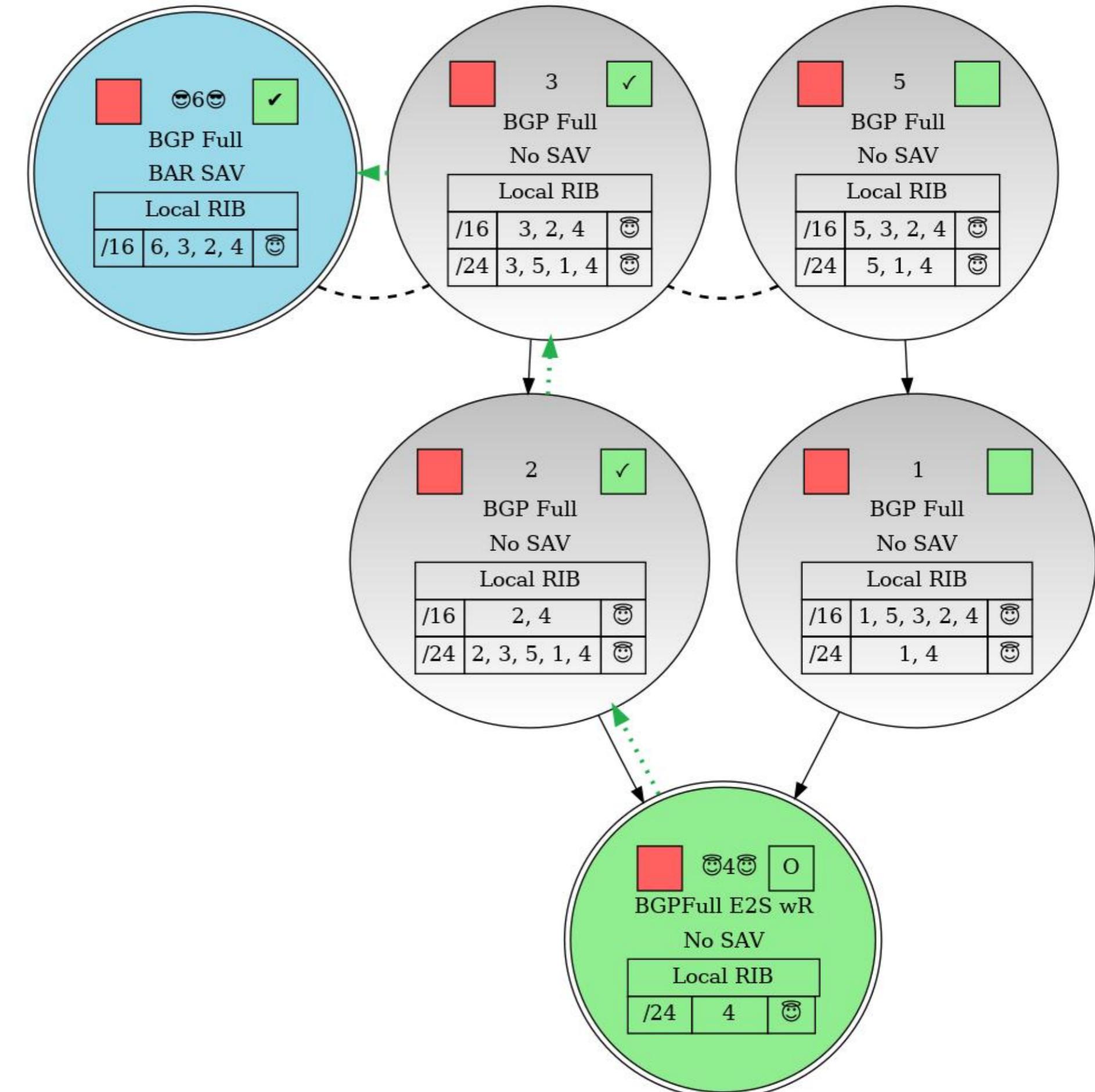
ROAs (prefix, origin, max_len)



(bar_sav_005)
BAR SAV False Positive Test No ROA

(Data Plane Outcomes)

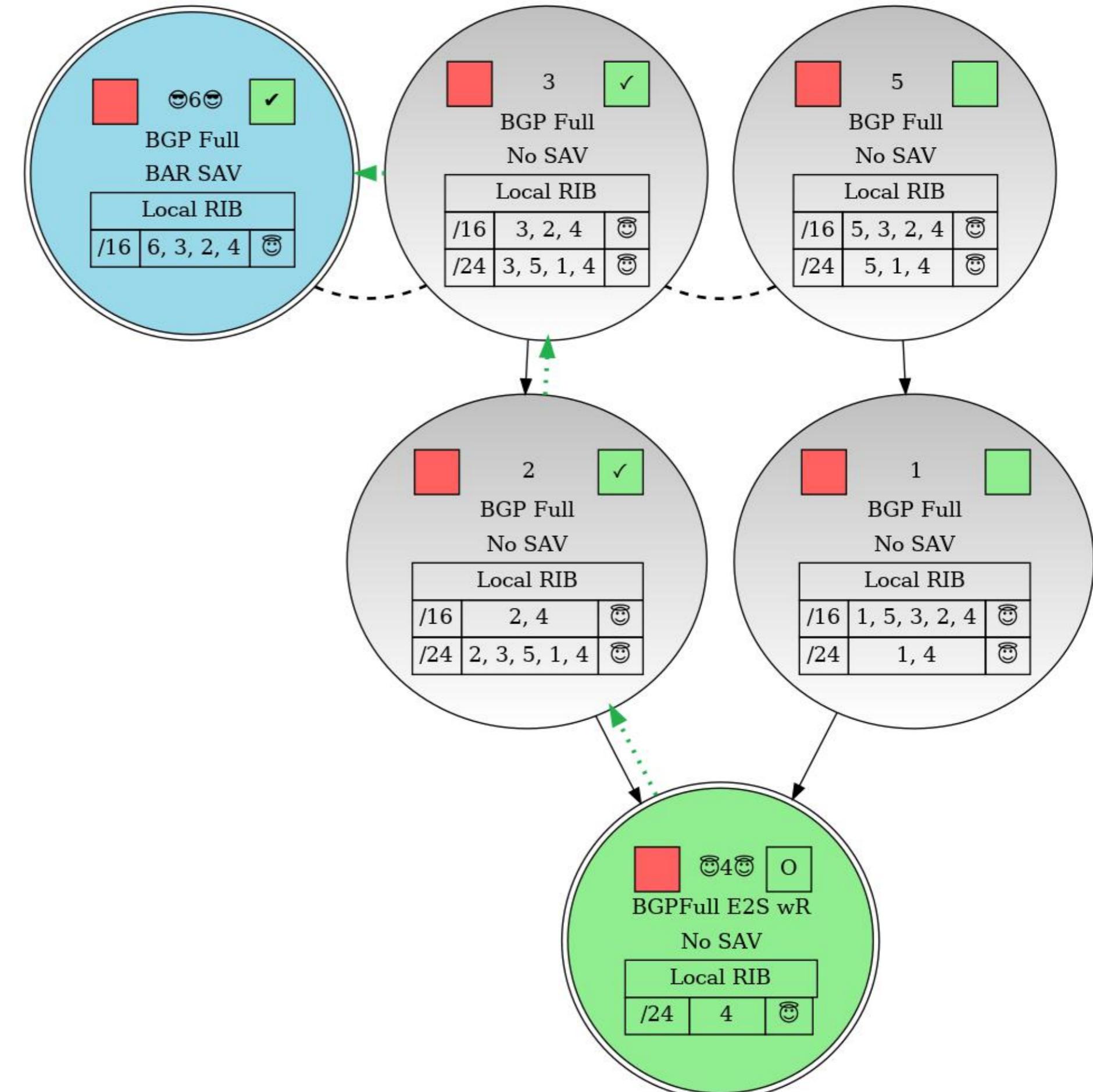
| (Attacker Outcomes) | | (Victim Outcomes) | |
|--------------------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |
| ROAs (prefix, origin, max_len) | | | |
| 7.7.7.0/24 | 4 | 24 | |



(bar_sav_006 Ground Truth)
BAR SAV False Positive Test with ROA (Expecting True Negative)

(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|--------------------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |
| ROAs (prefix, origin, max_len) | | | |
| 7.7.7.0/24 | 4 | 24 | |



(bar_sav_006)

BAR SAV False Positive Test with ROA (Expecting True Negative)

(Data Plane Outcomes)

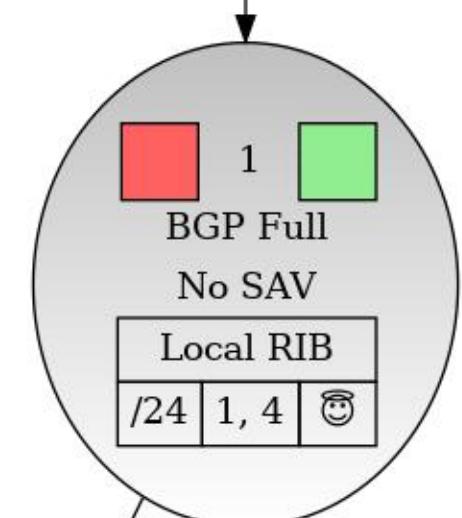
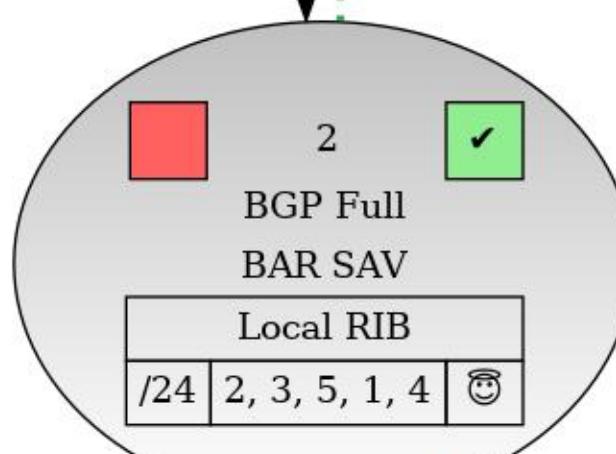
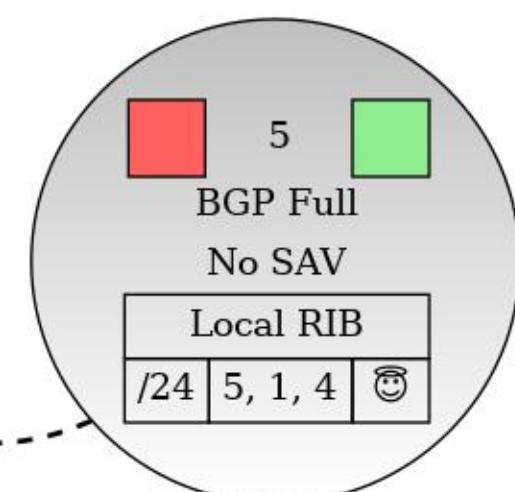
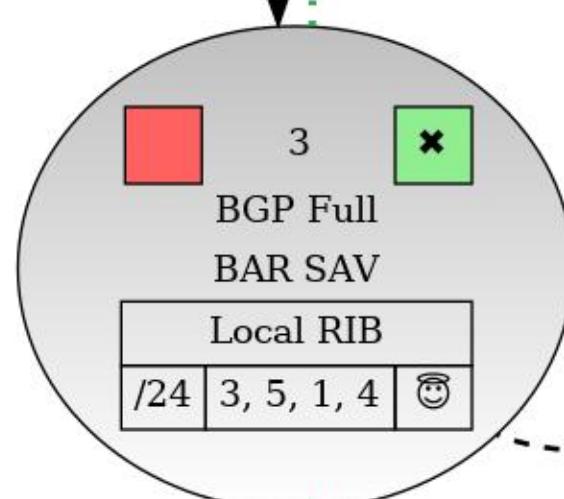
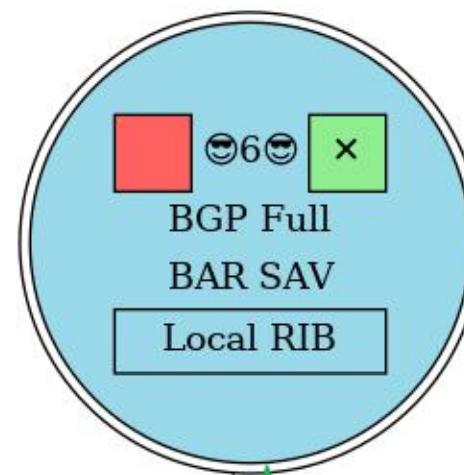
(Attacker Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 1 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

(Victim Outcomes)

ROAs (prefix, origin, max_len)

| | | |
|------------|---|----|
| 7.7.7.0/24 | 4 | 24 |
|------------|---|----|



(bar_sav_007 Ground Truth)
BAR SAV False Positive Test with ROA

(Data Plane Outcomes)

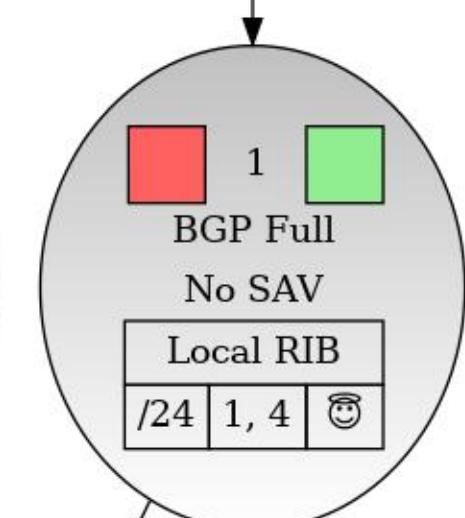
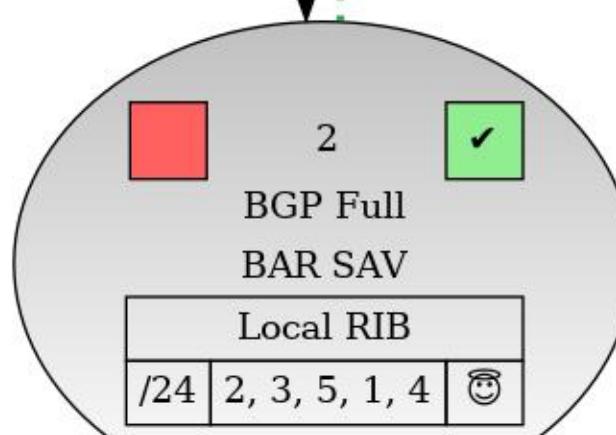
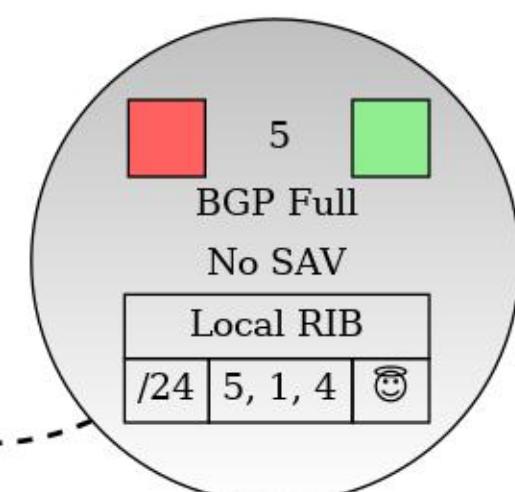
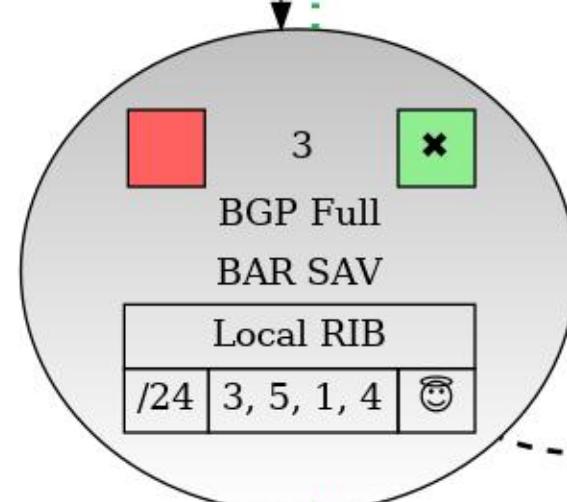
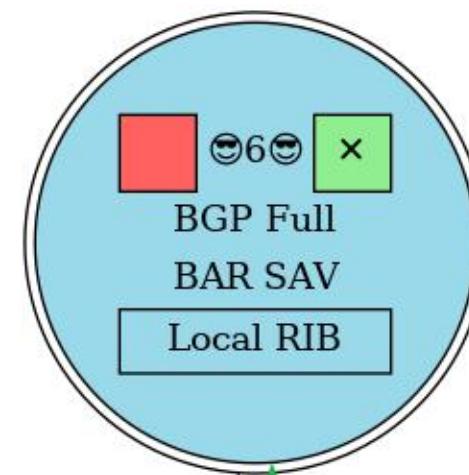
(Attacker Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 1 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

(Victim Outcomes)

ROAs (prefix, origin, max_len)

| | | |
|------------|---|----|
| 7.7.7.0/24 | 4 | 24 |
|------------|---|----|



(bar_sav_007)
 BAR SAV False Positive Test with ROA

(Data Plane Outcomes)

(Attacker Outcomes)

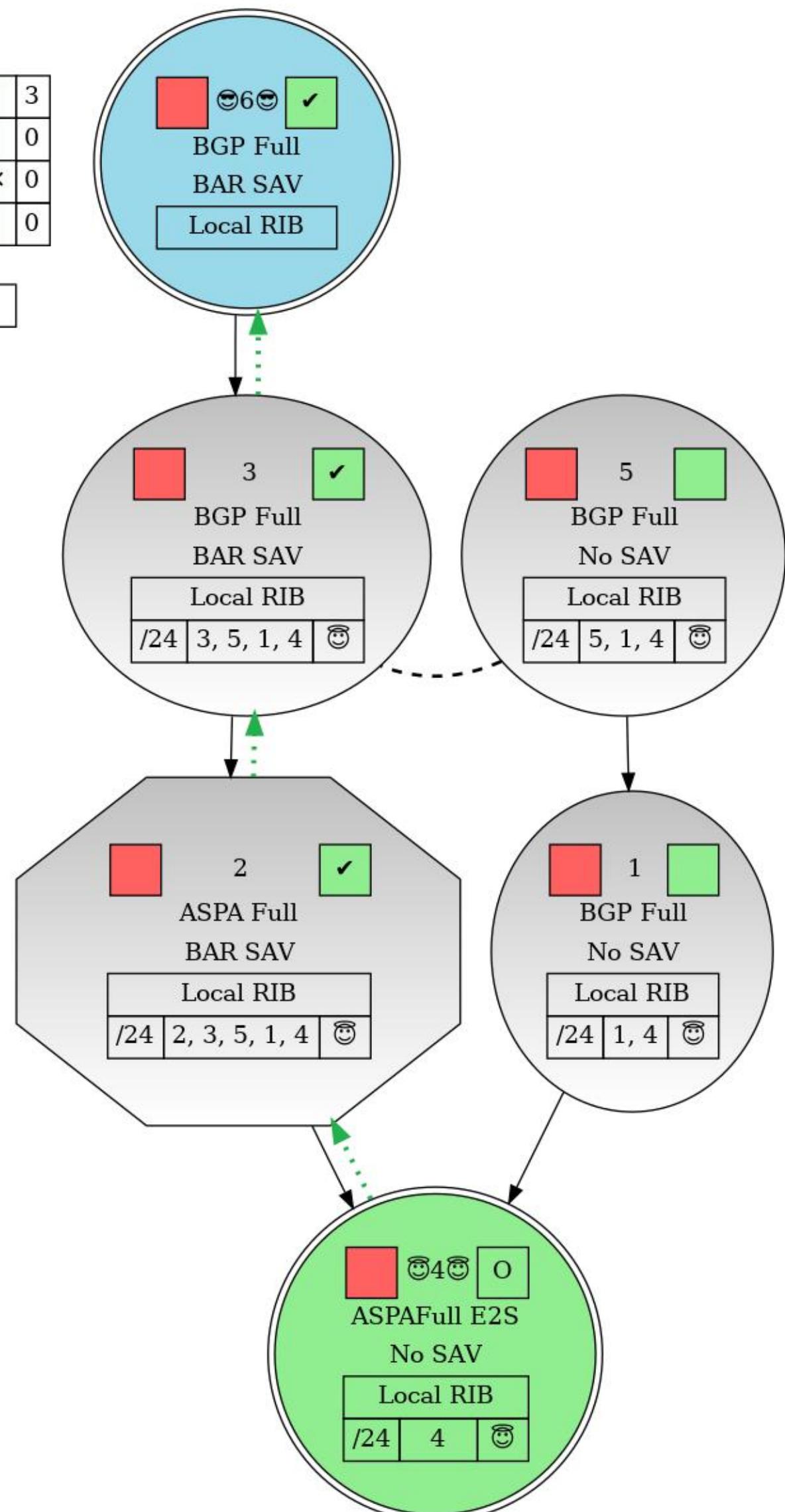
| | |
|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 |
| ✗ TRUE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 |

(Victim Outcomes)

| | |
|----------------------|---|
| ✓ TRUE NEGATIVE ✓ | 3 |
| ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)

| | | |
|------------|---|----|
| 7.7.7.0/24 | 4 | 24 |
|------------|---|----|



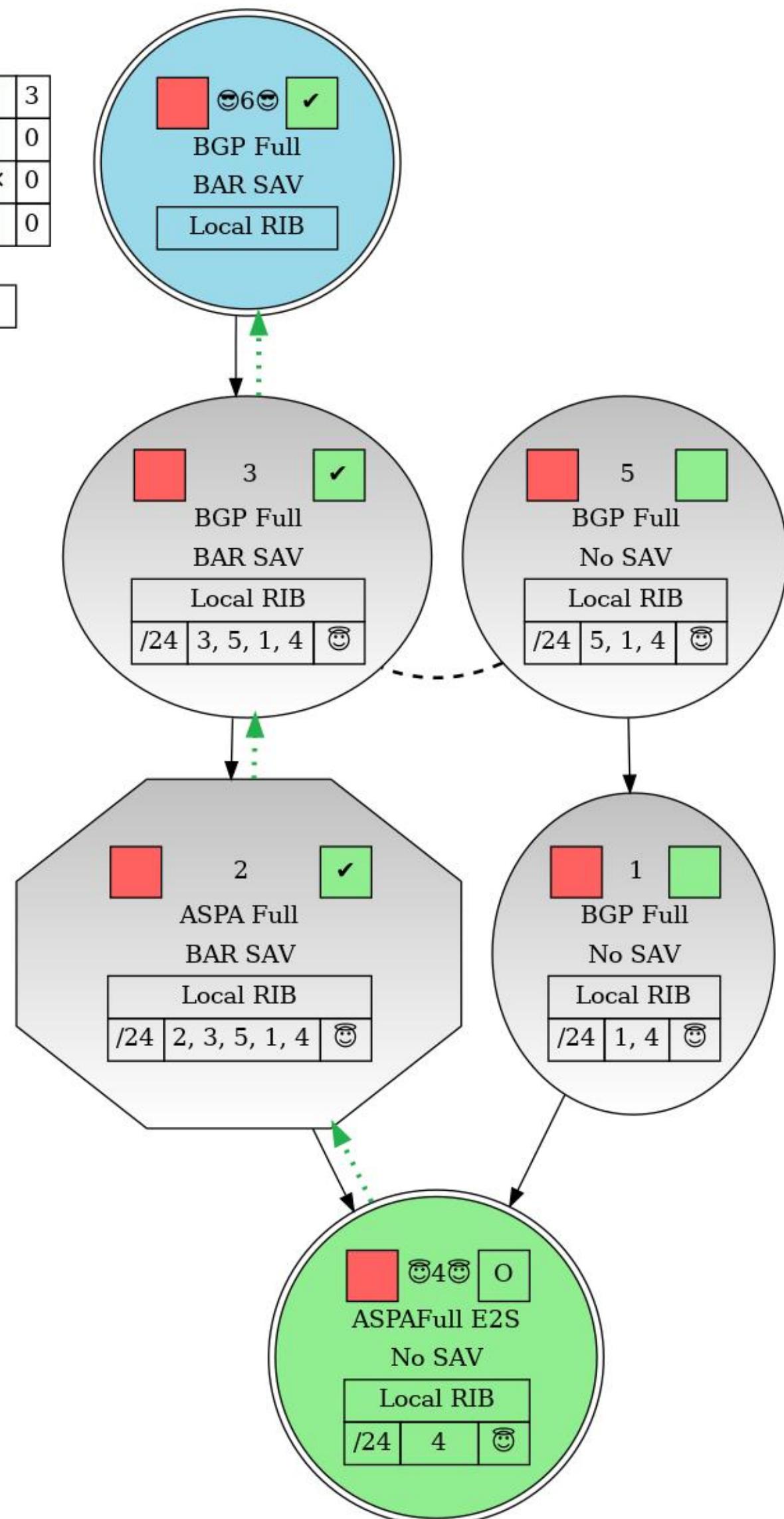
(bar_sav_008 Ground Truth)
BAR SAV False Positive Test with ROA and ASPA (Expecting True Negative)

(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 3 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)

| | | |
|------------|---|----|
| 7.7.7.0/24 | 4 | 24 |
|------------|---|----|



(bar_sav_008)
BAR SAV False Positive Test with ROA and ASPA (Expecting True Negative)

(Data Plane Outcomes)

(Attacker Outcomes)

✓ FALSE NEGATIVE ✓

0

(Victim Outcomes)

✓ TRUE NEGATIVE ✓

2

✗ TRUE POSITIVE ✗

0

✗ FALSE POSITIVE ✗

0

✗ FILTERED ON PATH ✗

0

✗ FILTERED ON PATH ✗

0

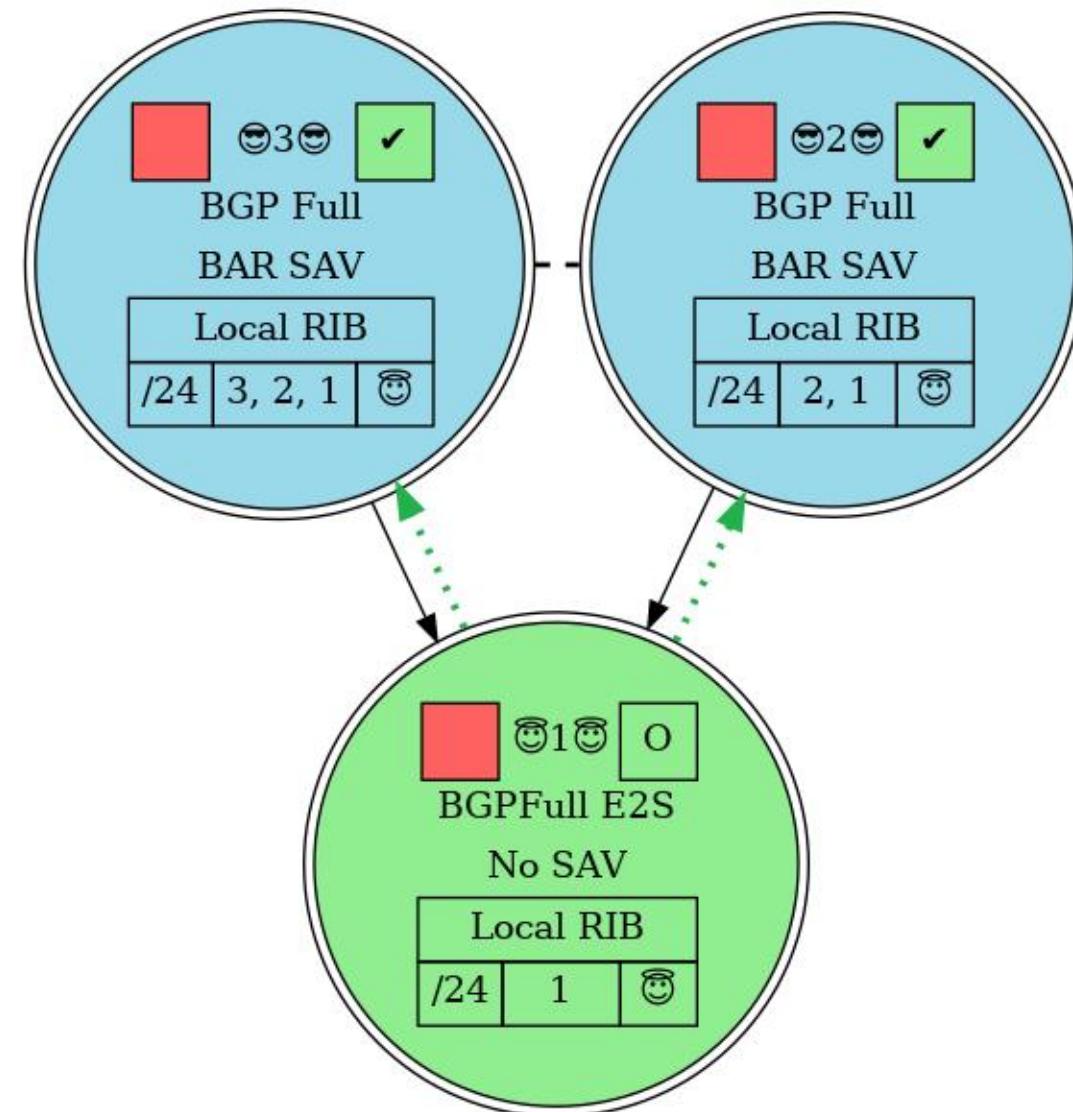
⊥ DISCONNECTED ⊥

0

⊥ DISCONNECTED ⊥

0

ROAs (prefix, origin, max_len)



(bar_sav_009 Ground Truth)
Basic Export to Some

(Data Plane Outcomes)

(Attacker Outcomes)

✓ FALSE NEGATIVE ✓

0

(Victim Outcomes)

✓ TRUE NEGATIVE ✓

2

✗ TRUE POSITIVE ✗

0

✗ FALSE POSITIVE ✗

0

✗ FILTERED ON PATH ✗

0

✗ FILTERED ON PATH ✗

0

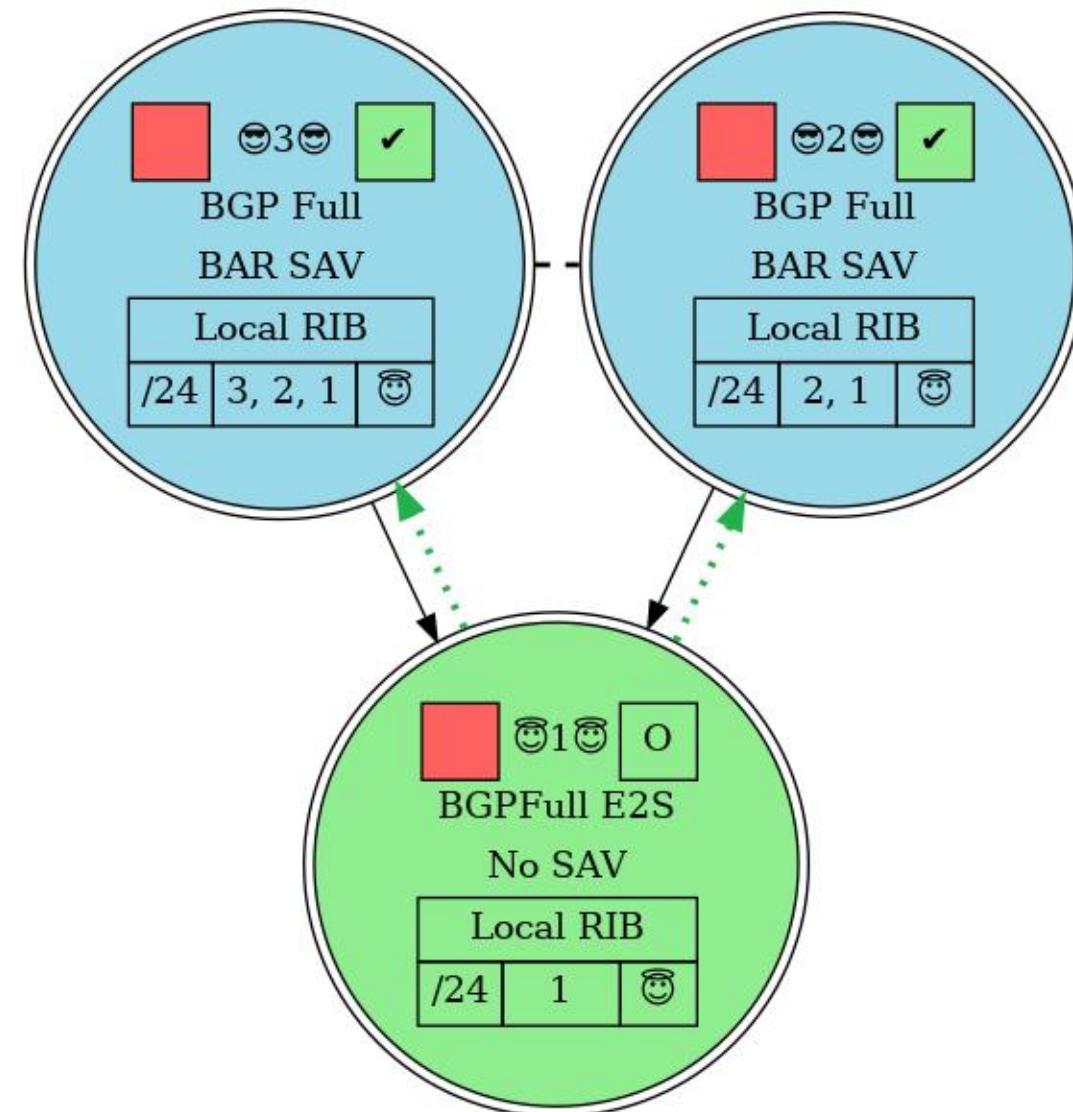
⊥ DISCONNECTED ⊥

0

⊥ DISCONNECTED ⊥

0

ROAs (prefix, origin, max_len)



(bar_sav_009)
Basic Export to Some

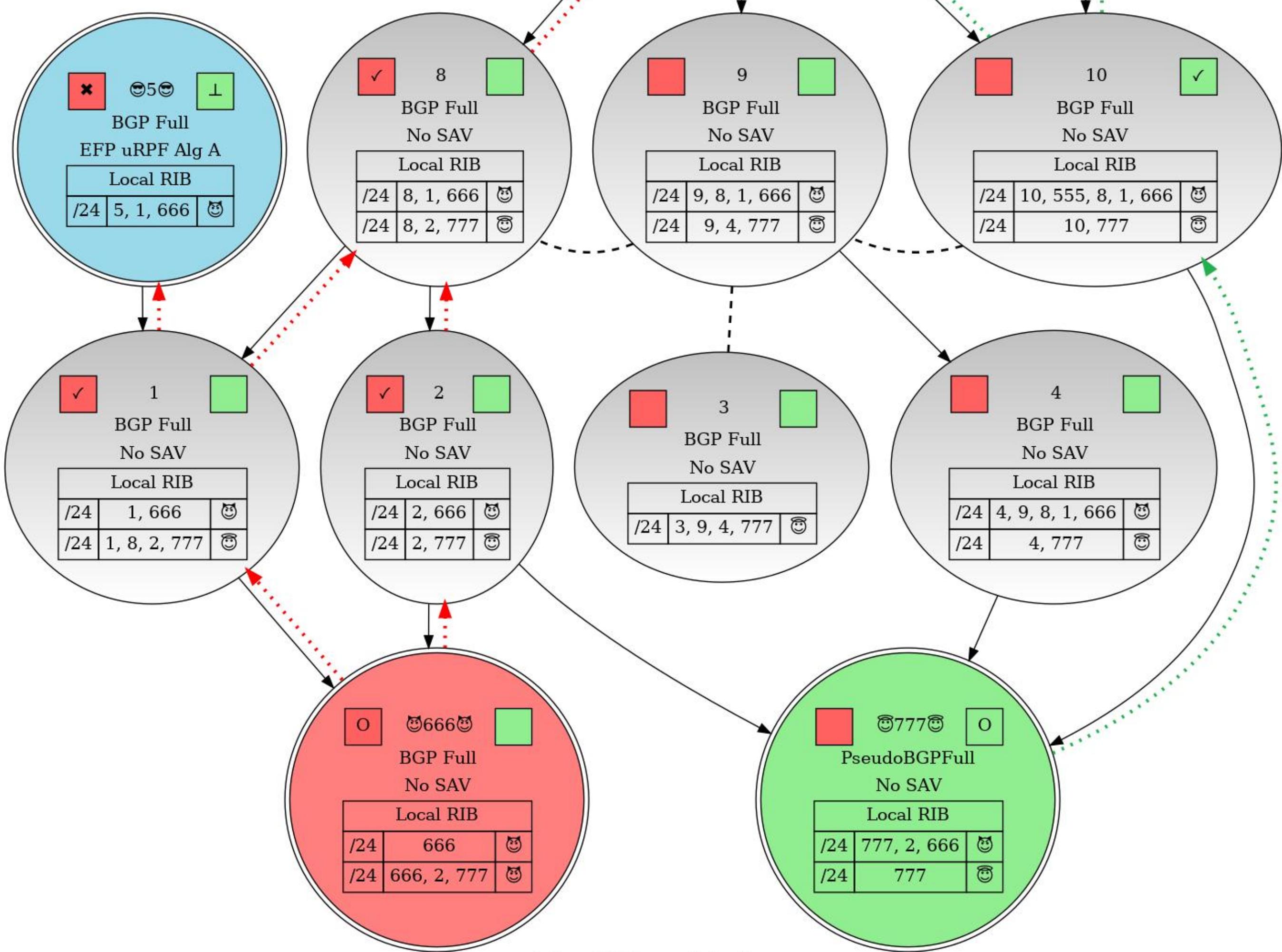
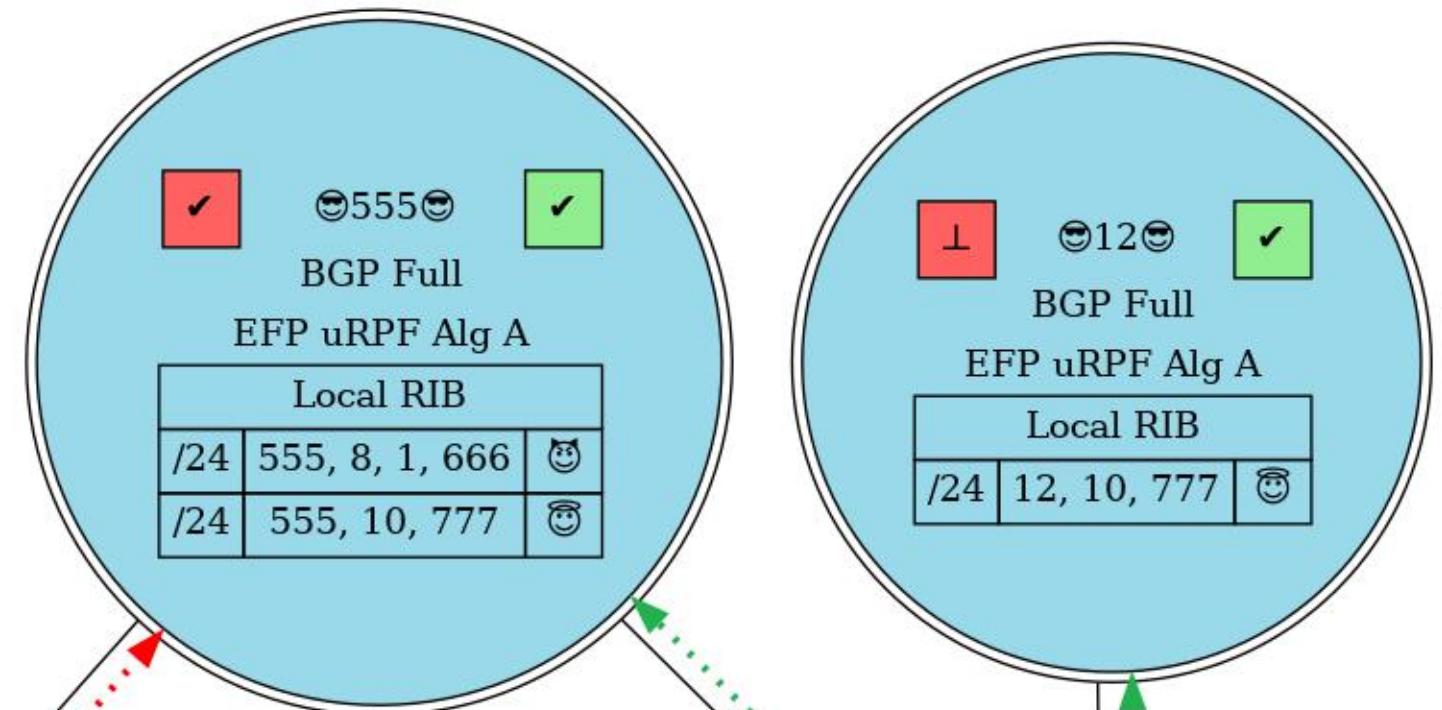
(Data Plane Outcomes)

(Attacker Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |

ROAs (prefix, origin, max_len)

(Victim Outcomes)



(efp_a_000 Ground Truth)

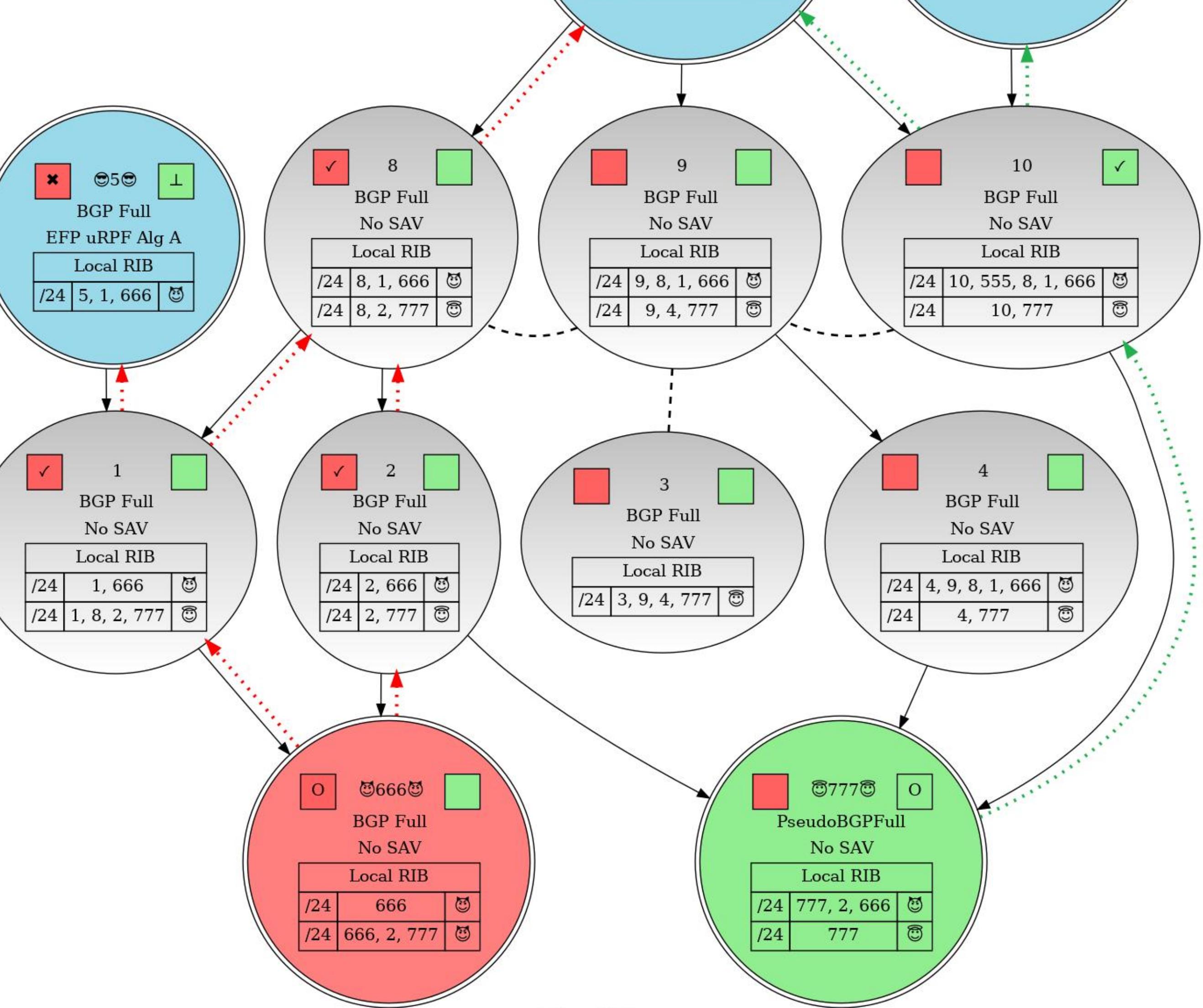
Three reflectors running EFP uRPF Alg A, one disconnected from both victim and attacker

(Data Plane Outcomes)

(Attacker Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |

ROAs (prefix, origin, max_len)



(efp_a_000)

Three reflectors running EFP uRPF Alg A, one disconnected from both victim and attacker

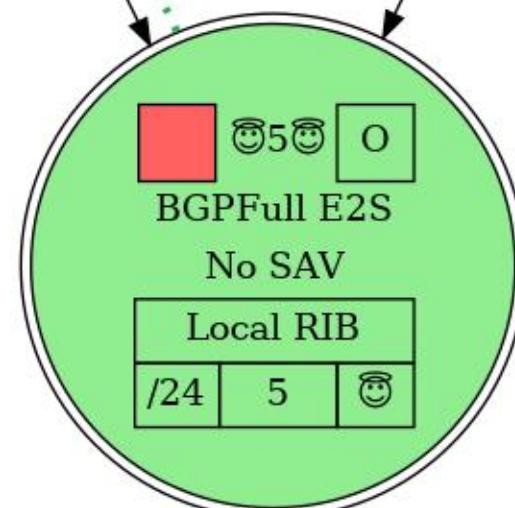
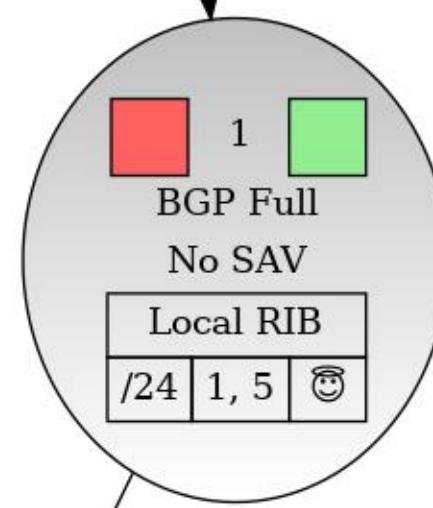
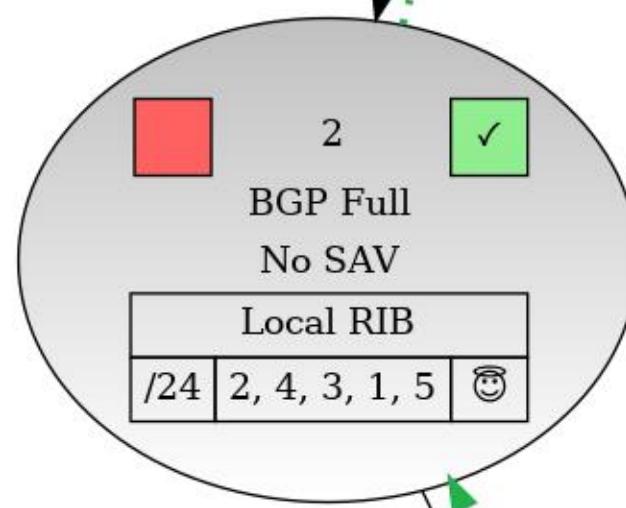
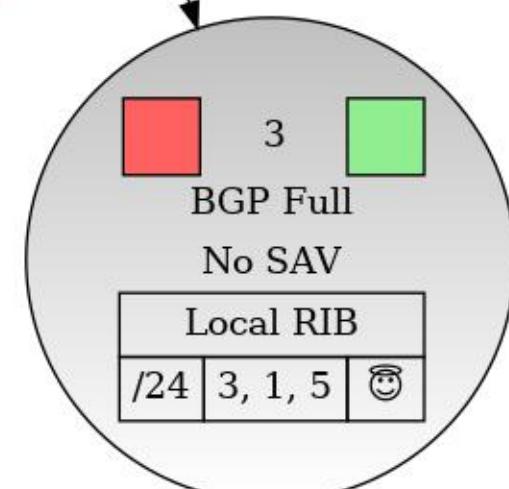
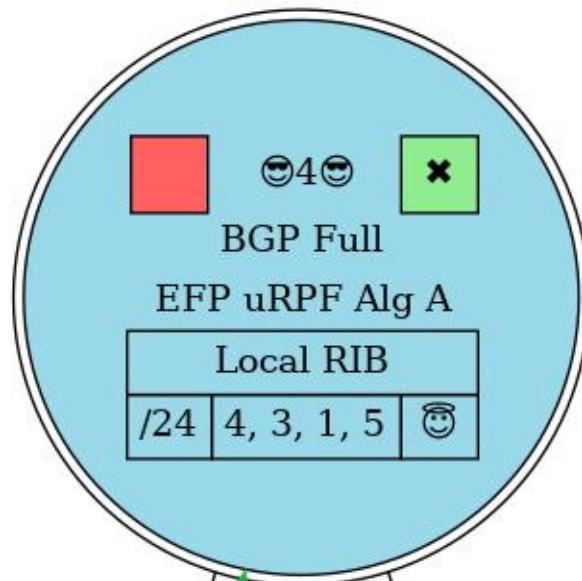
(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 0 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)



(efp_a_001 Ground Truth)
Export 2 some failing for EFP Alg A

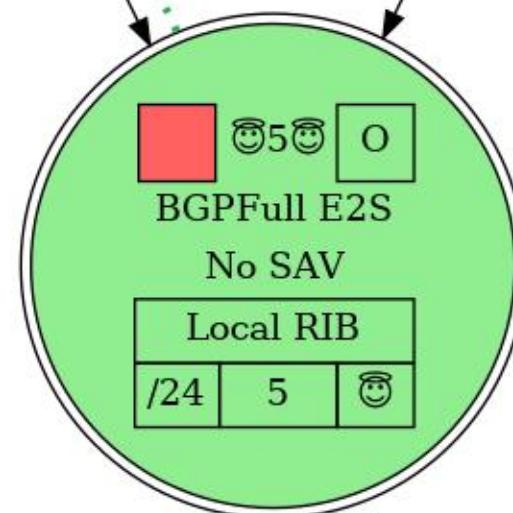
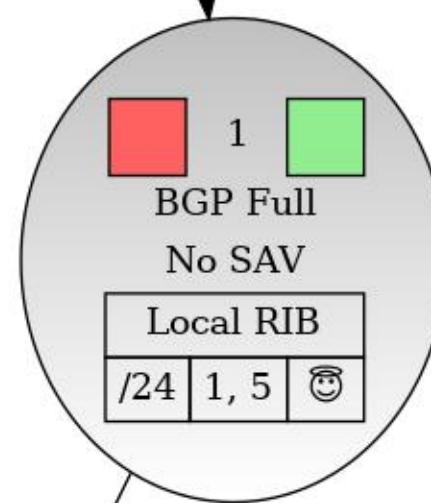
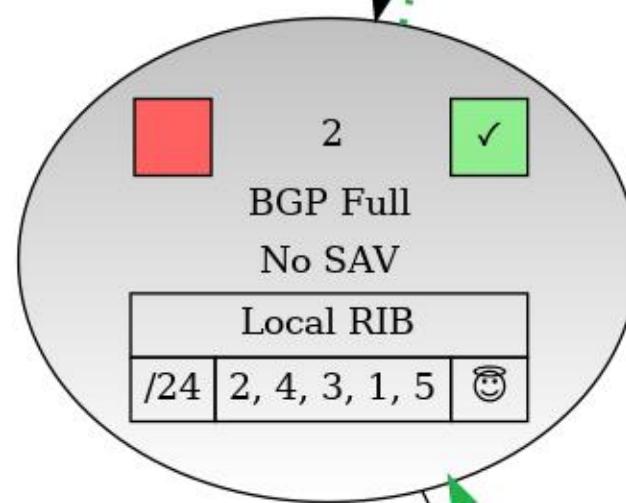
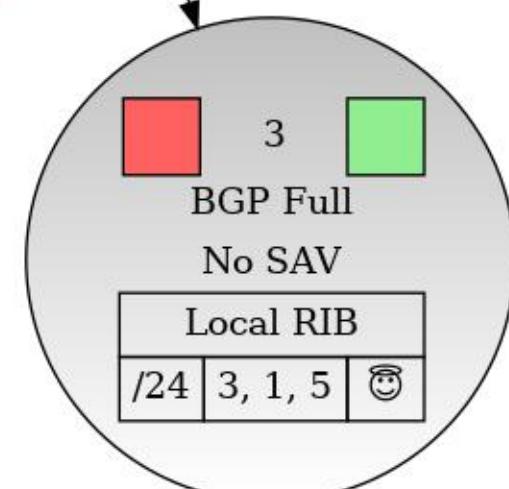
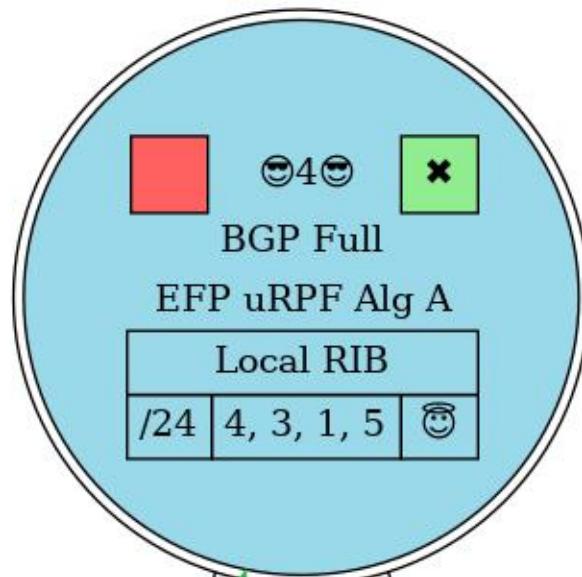
(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 0 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)



(efp_a_001)
Export 2 some failing for EFP Alg A

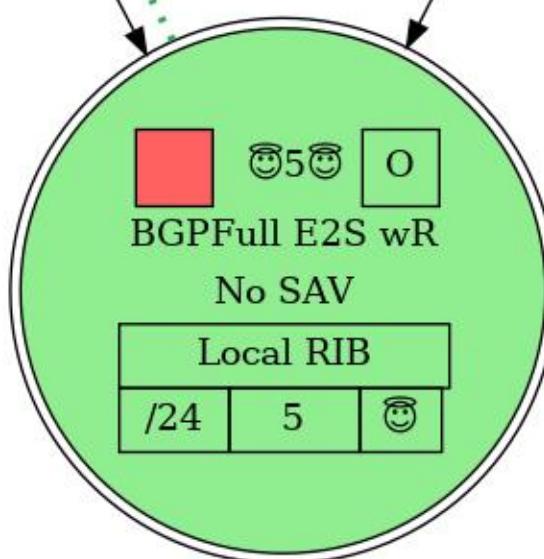
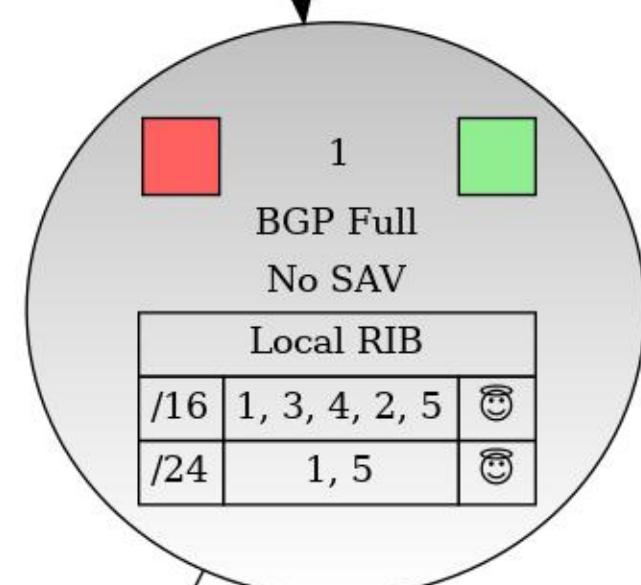
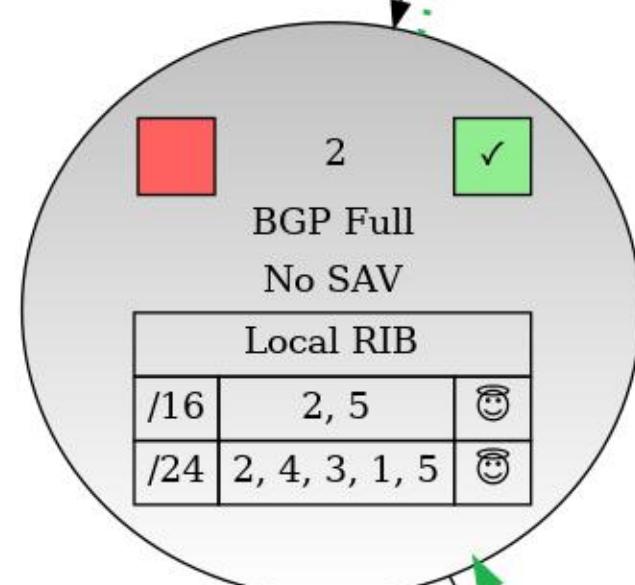
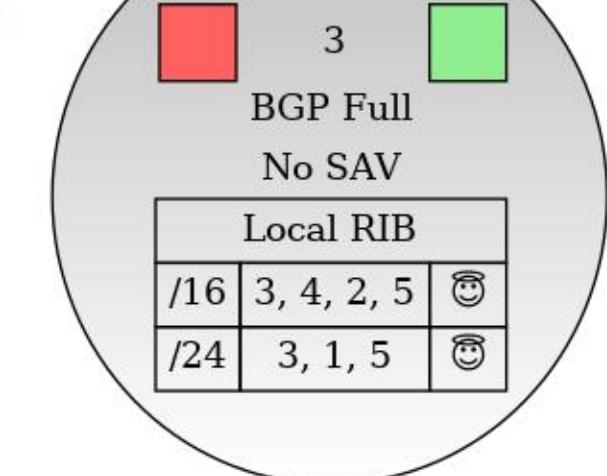
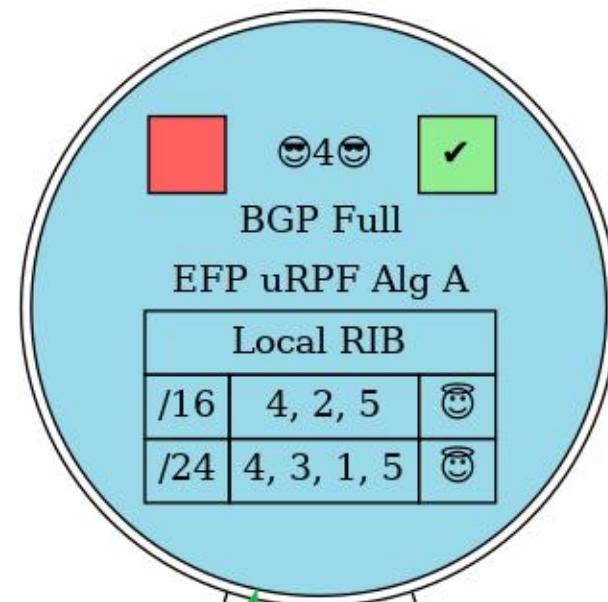
(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)



(efp_a_002 Ground Truth)
Export 2 some passing for EFP Alg A

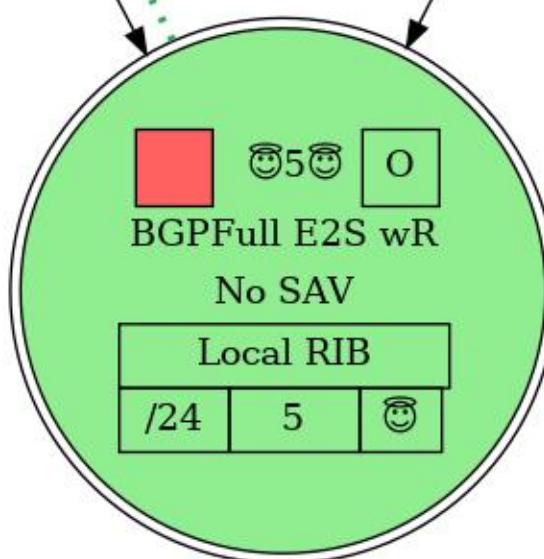
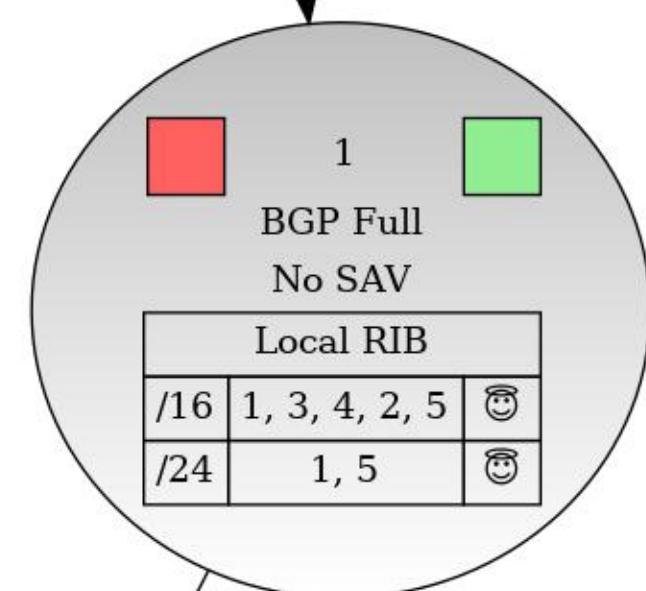
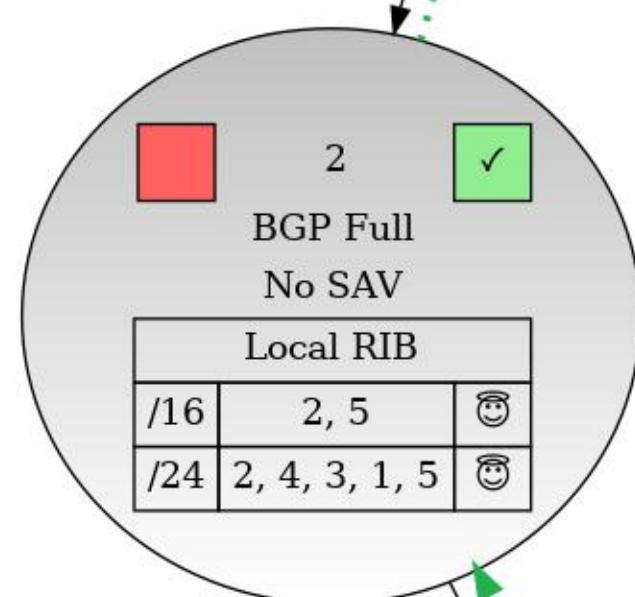
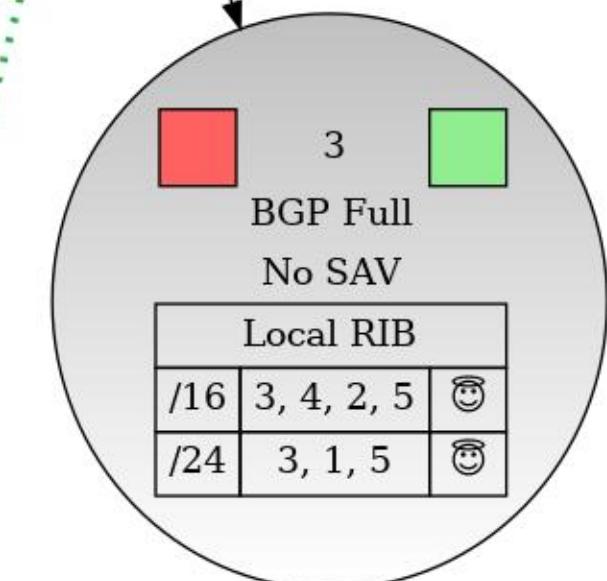
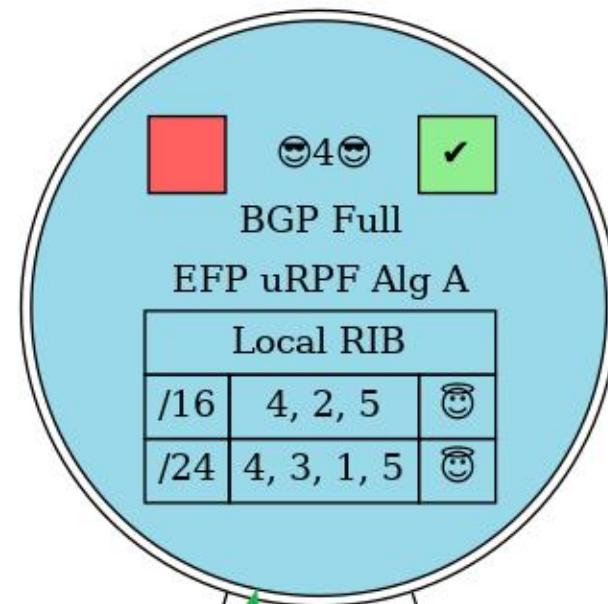
(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

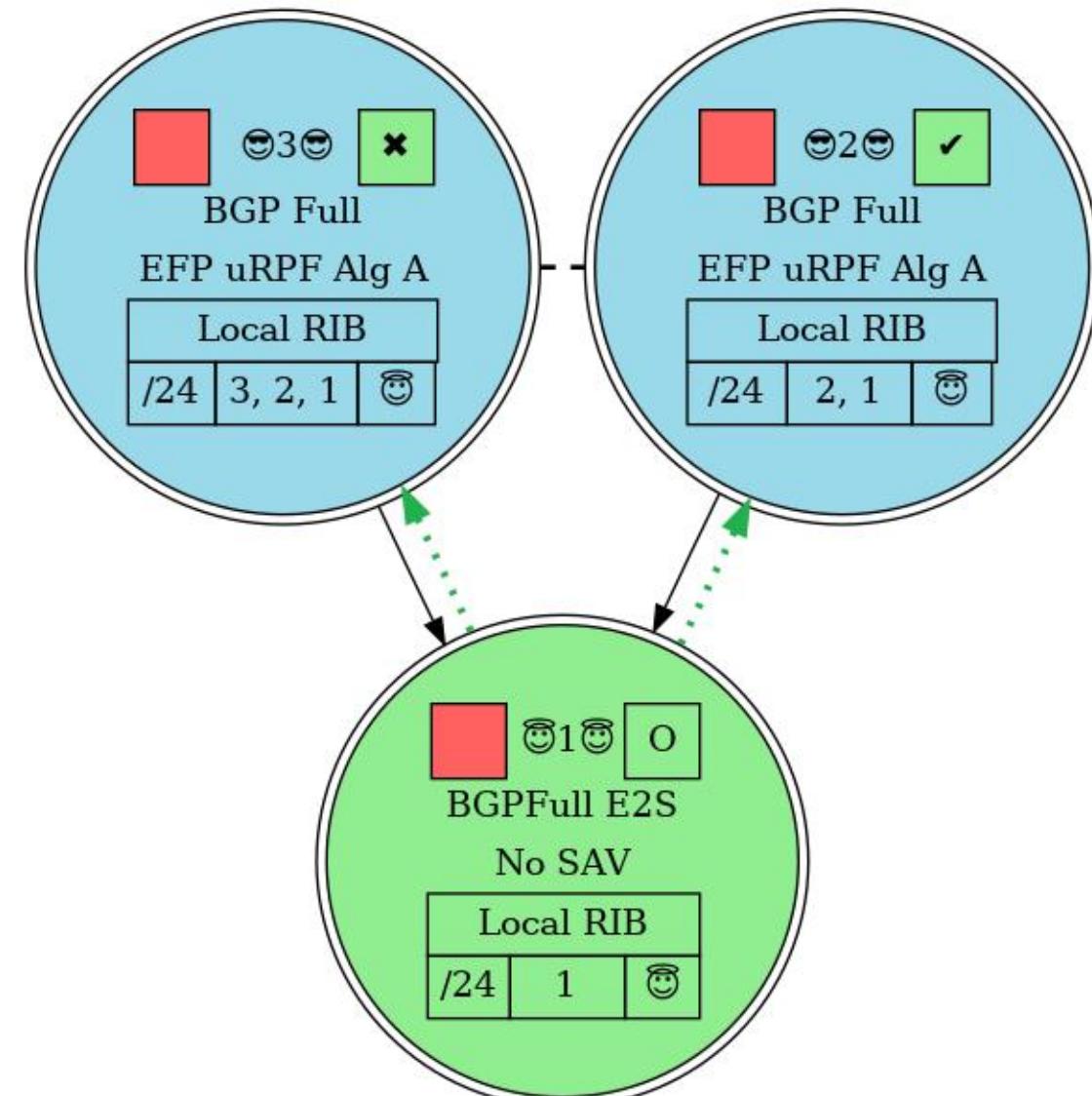
ROAs (prefix, origin, max_len)



(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)

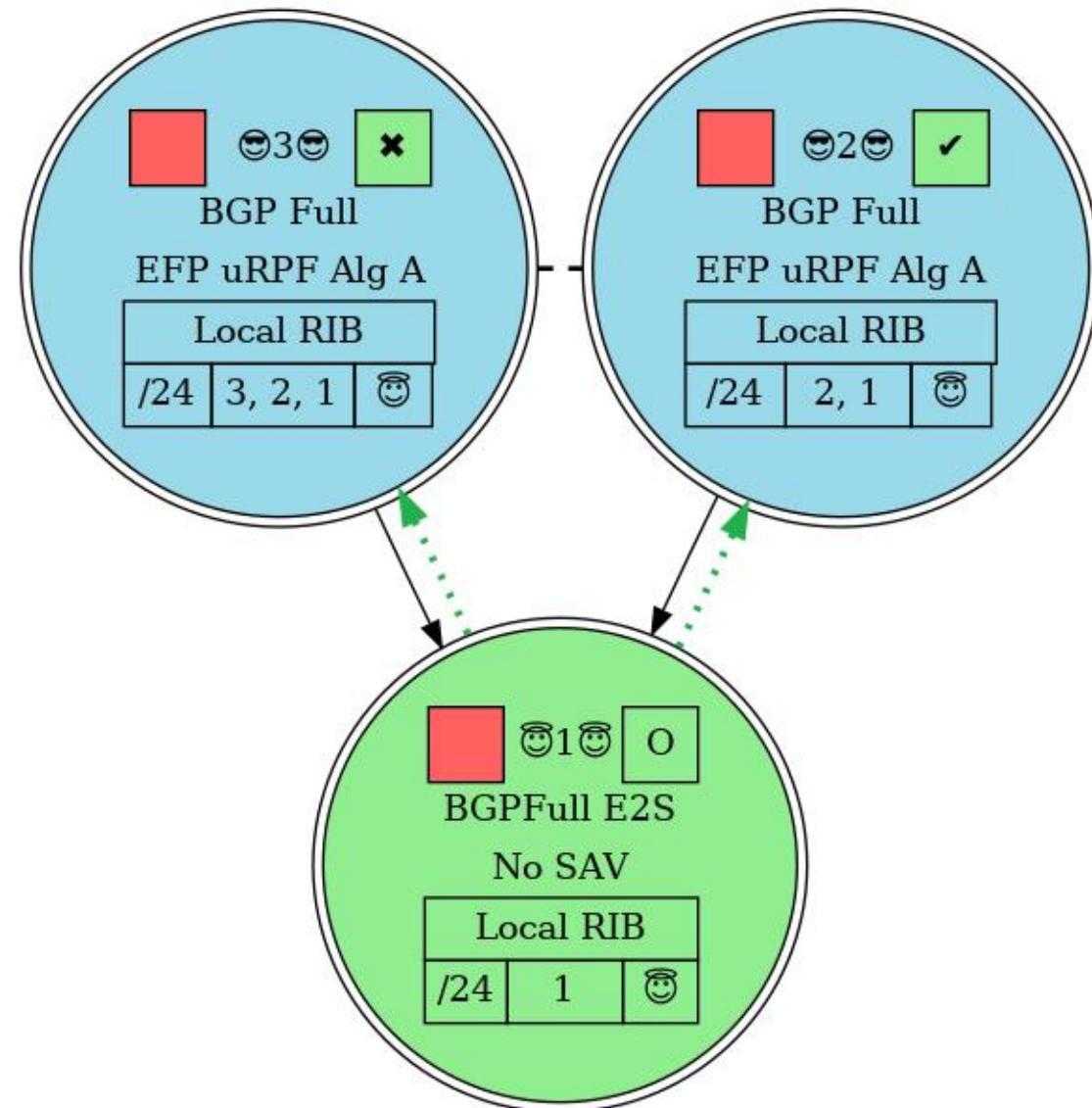


(efp_a_003 Ground Truth)
Basic Export to Some

(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)



(efp_a_003)
Basic Export to Some

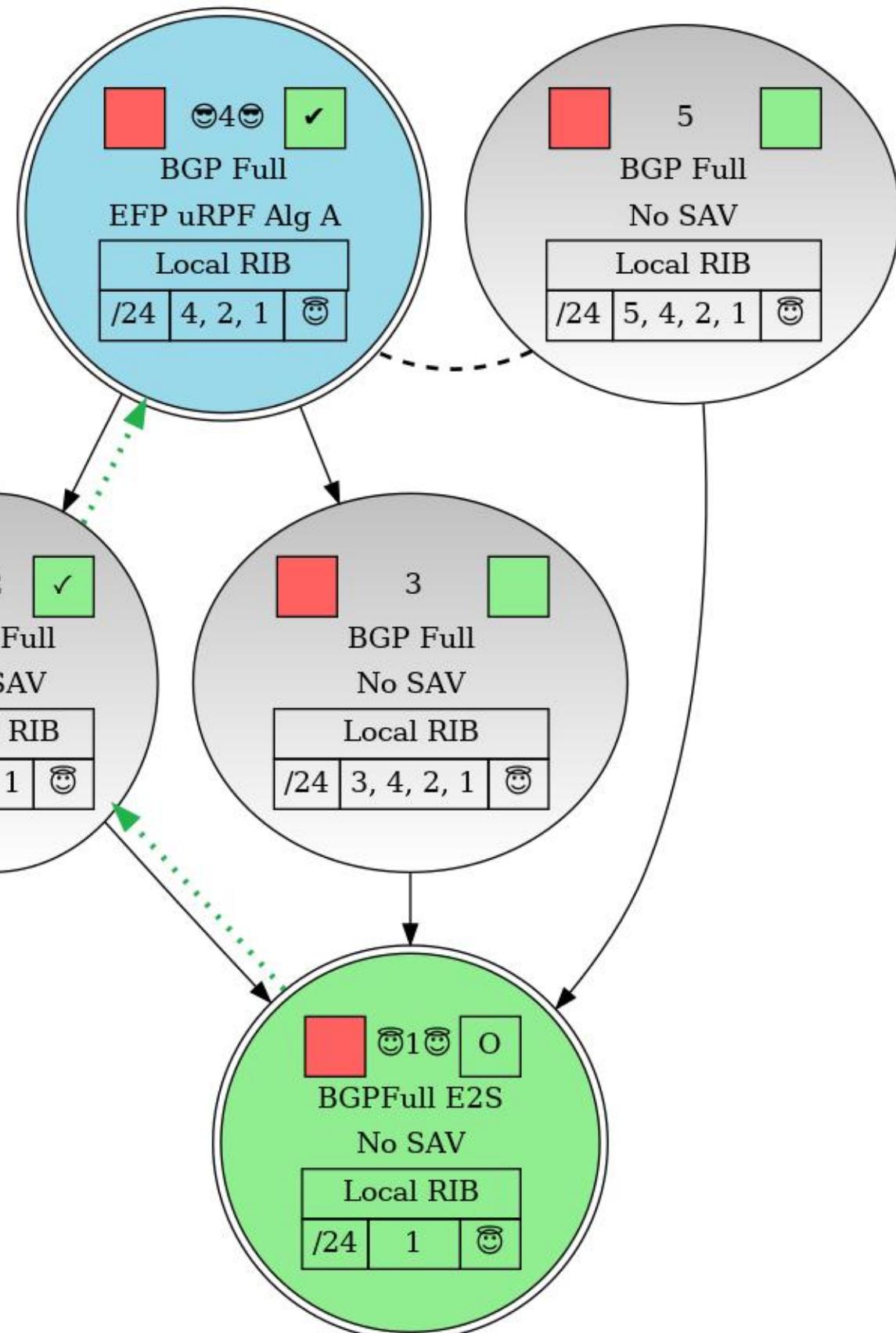
(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)



(efp_a_004 Ground Truth)

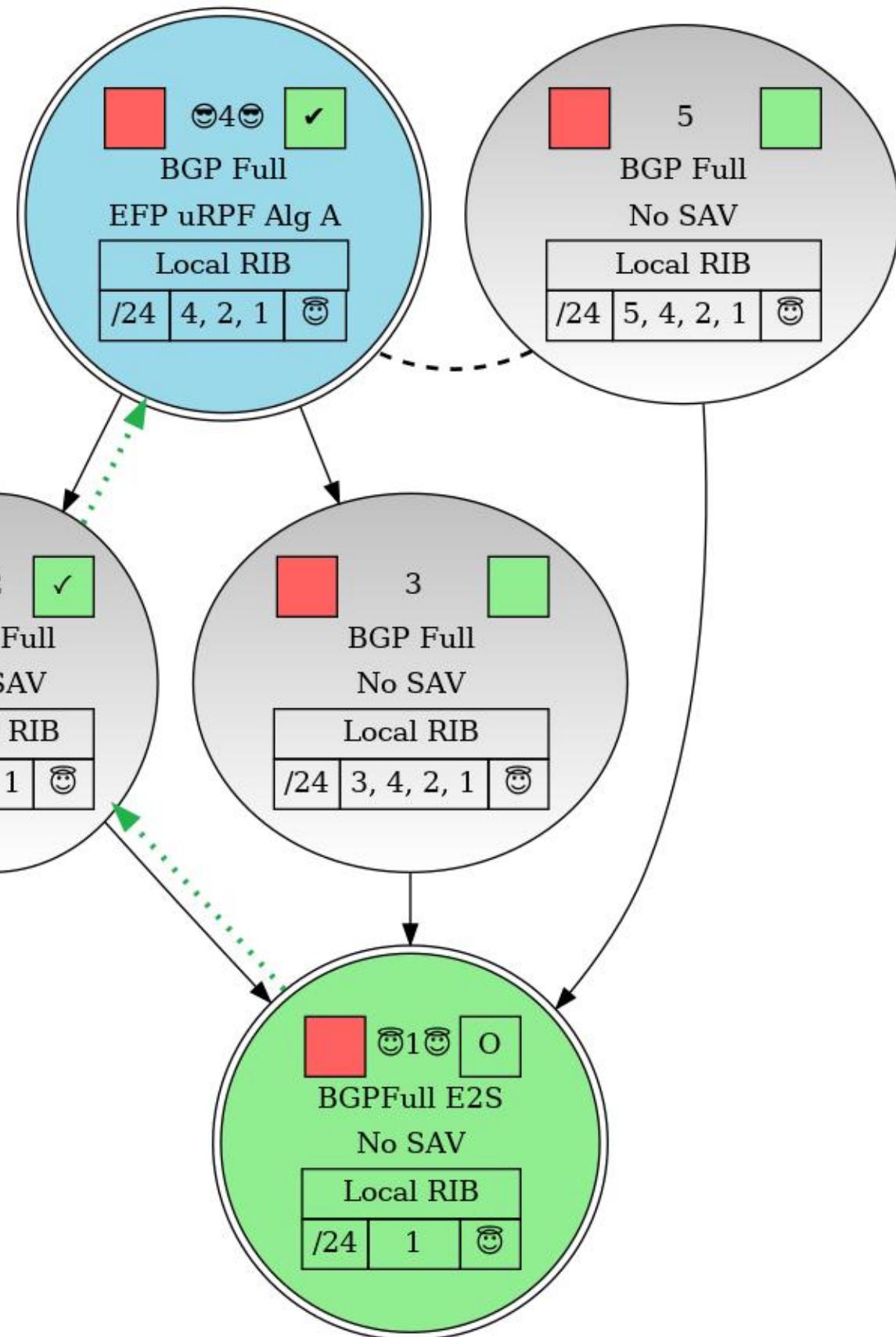
(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

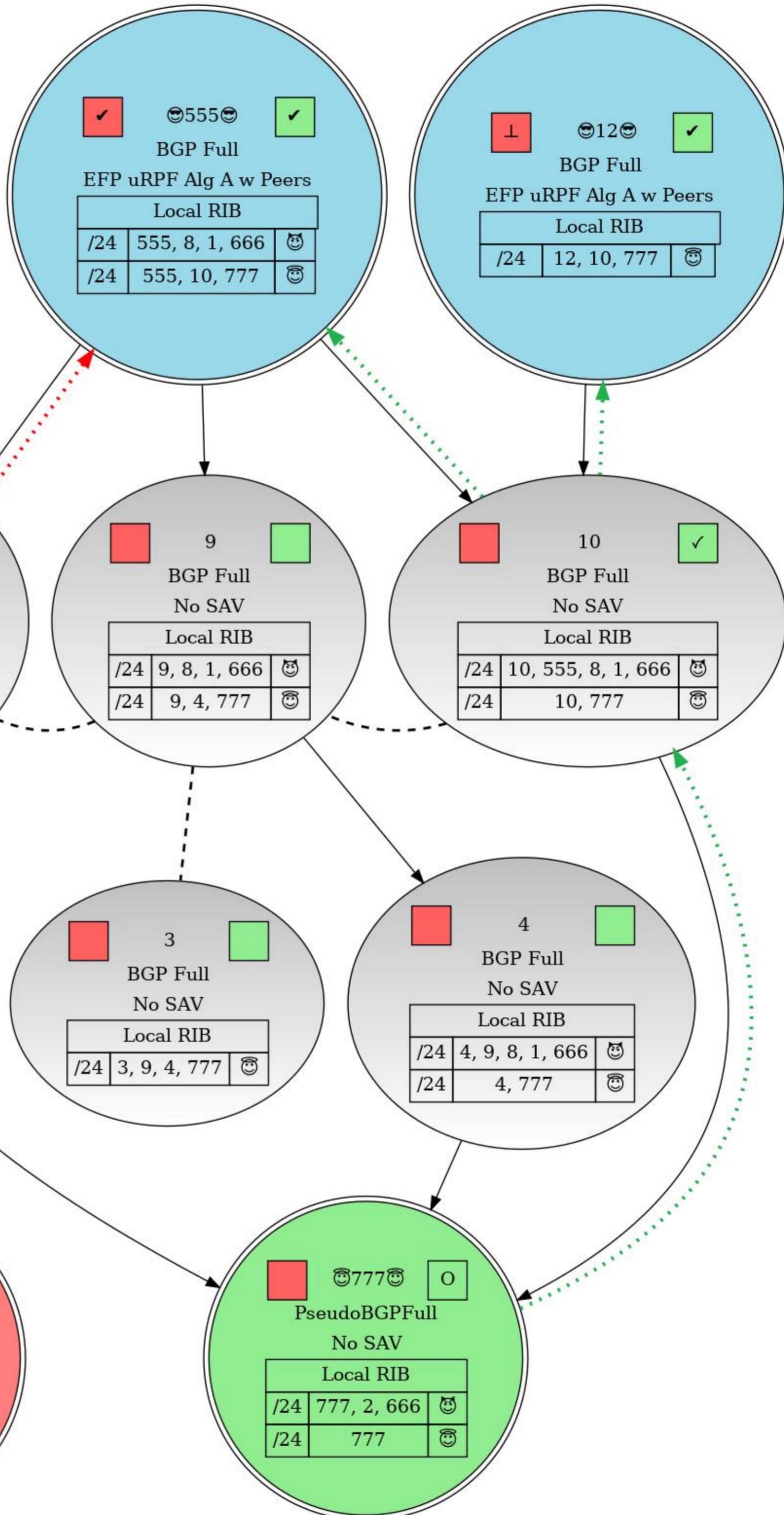
ROAs (prefix, origin, max_len)



(efp_a_004)

(Data Plane Outcomes)

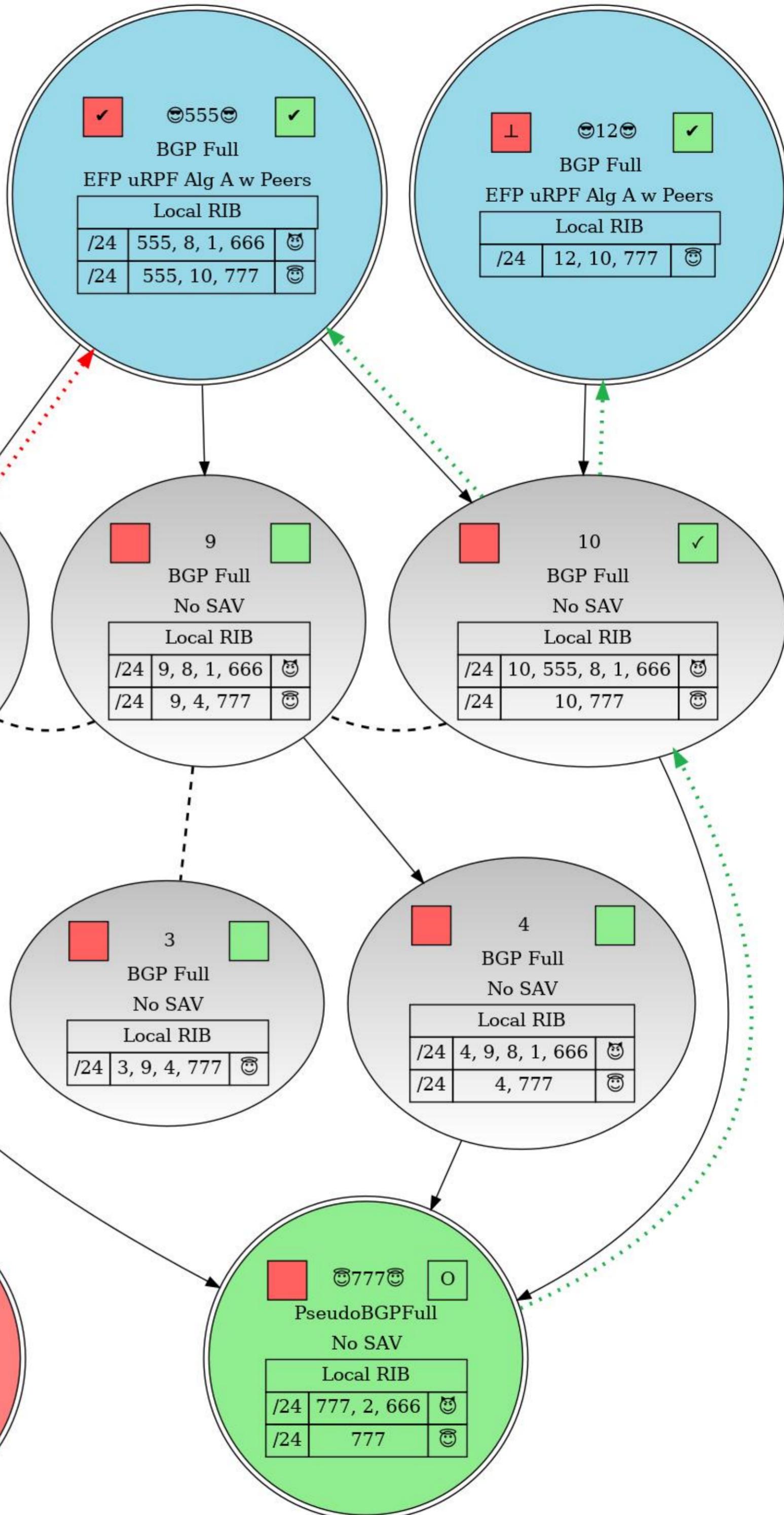
| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |



(efp_a_w_peers_000 Ground Truth)
Three reflectors running EFP uRPF Alg A with Peers, one disconnected from both victim and attacker

(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |



(efp_a_w_peers_000)
Three reflectors running EFP uRPF Alg A with Peers, one disconnected from both victim and attacker

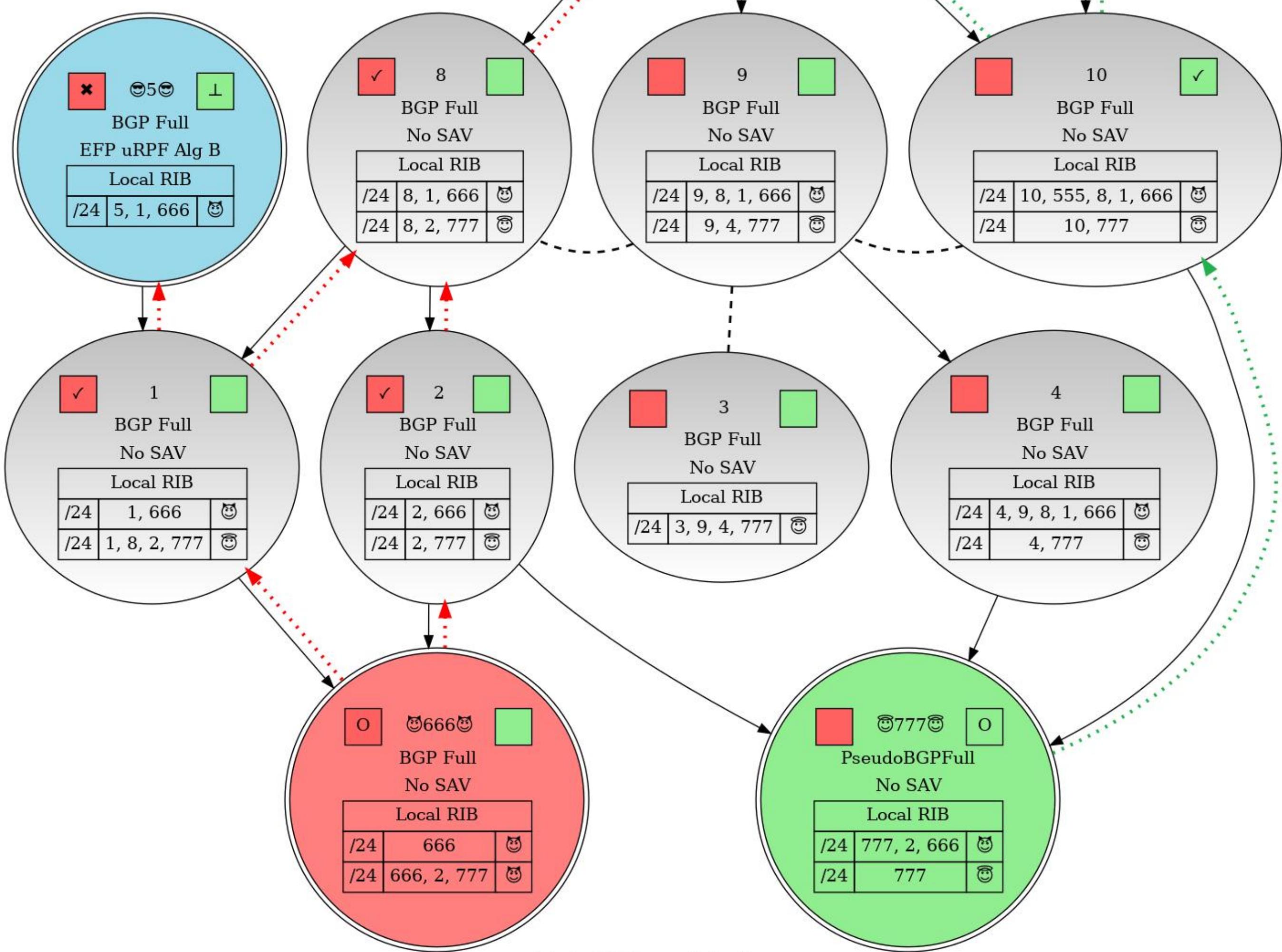
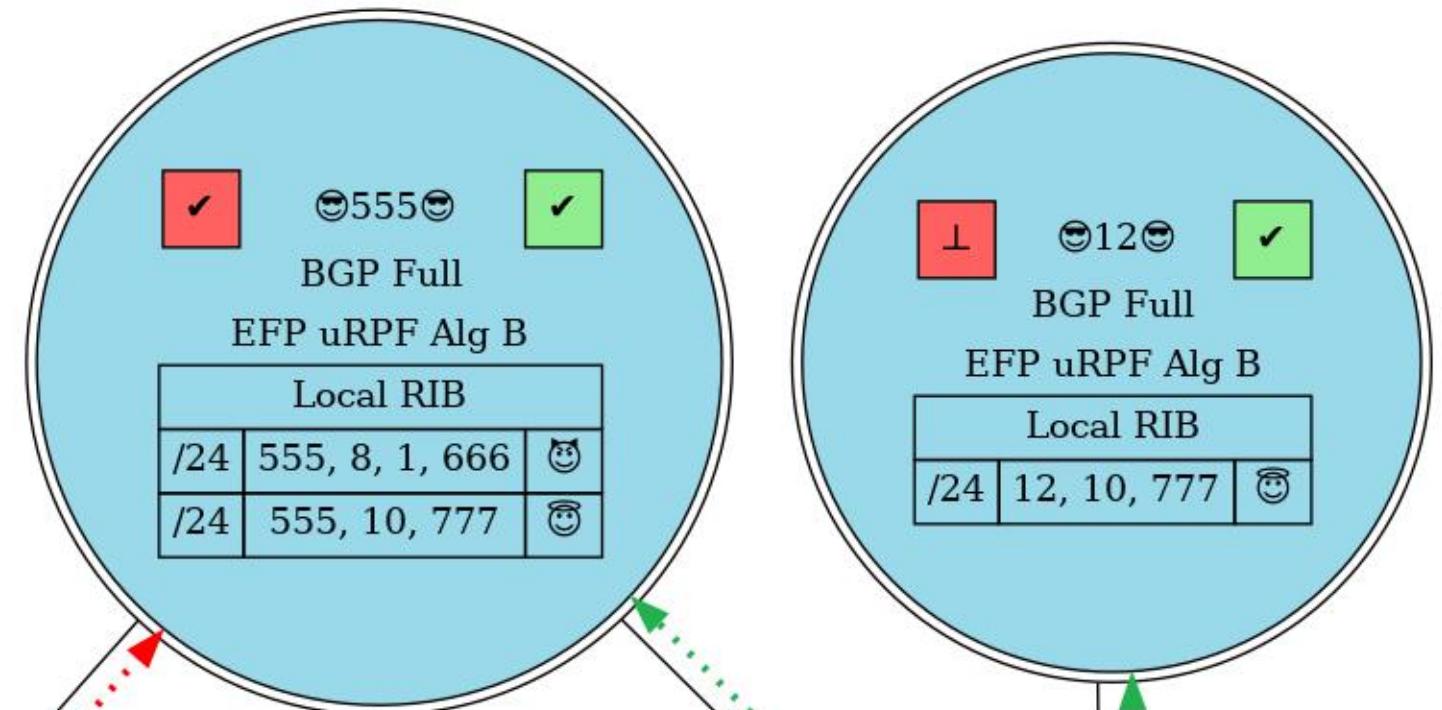
(Data Plane Outcomes)

(Attacker Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |

ROAs (prefix, origin, max_len)

(Victim Outcomes)



(efp_b_000 Ground Truth)

Three reflectors running EFP uRPF Alg B, one disconnected from both victim and attacker

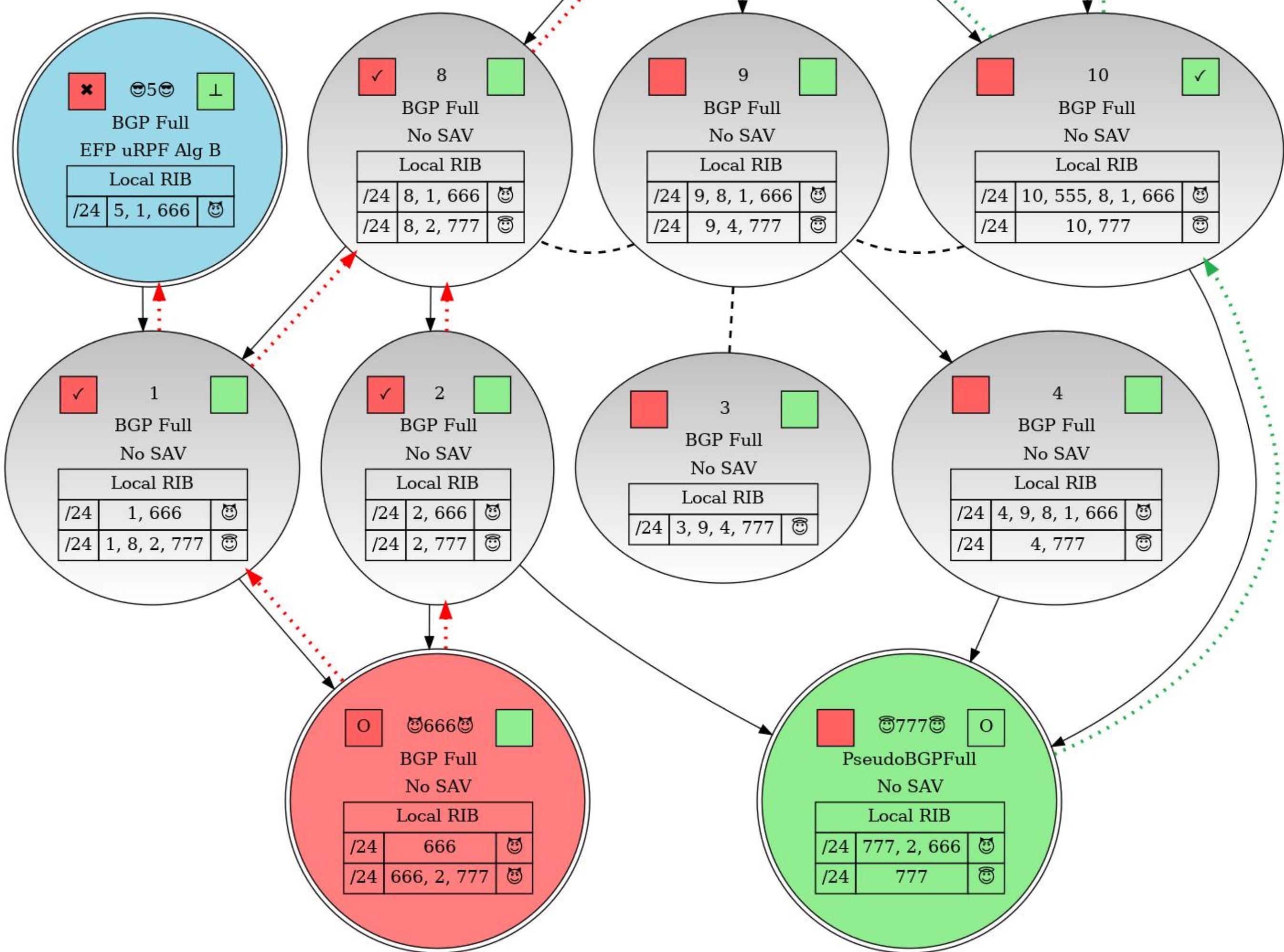
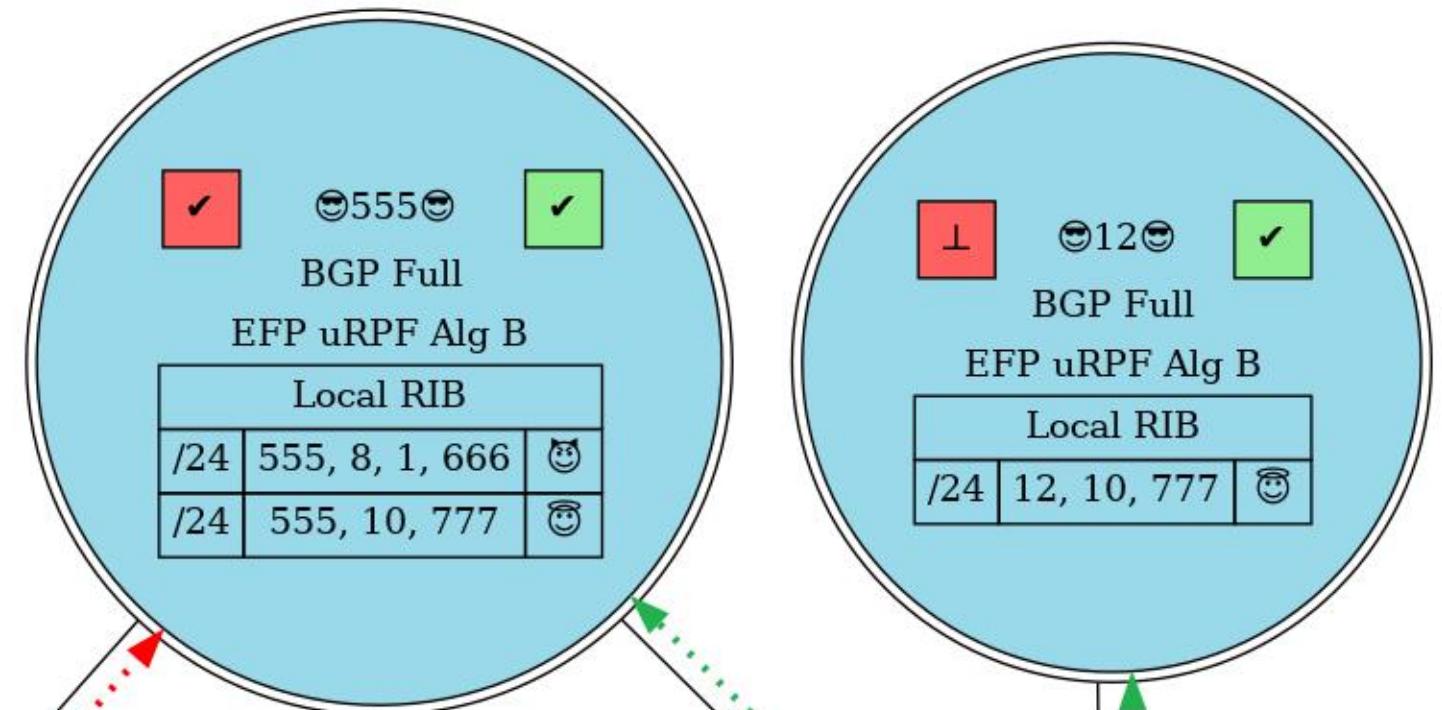
(Data Plane Outcomes)

(Attacker Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |

ROAs (prefix, origin, max_len)

(Victim Outcomes)



(efp_b_000)

Three reflectors running EFP uRPF Alg B, one disconnected from both victim and attacker

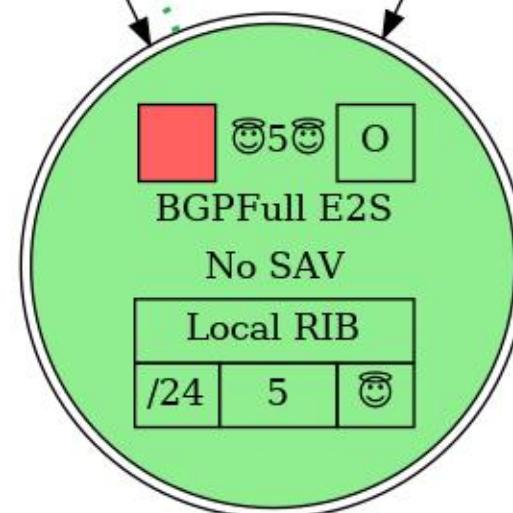
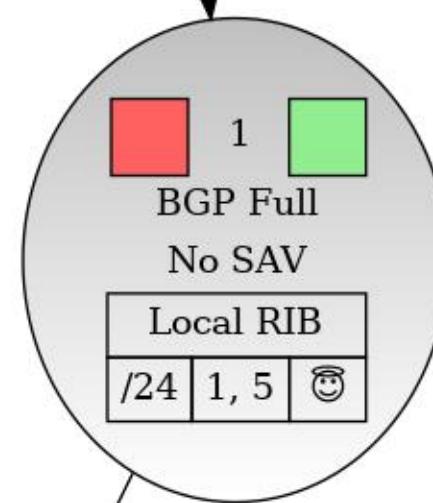
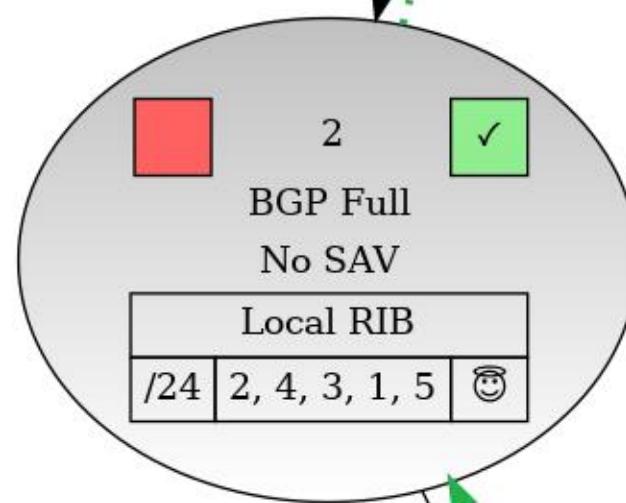
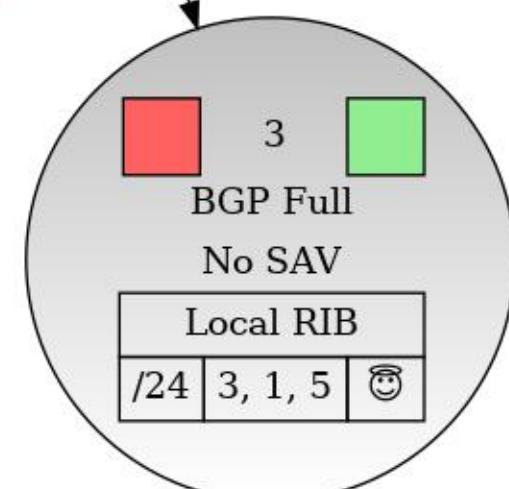
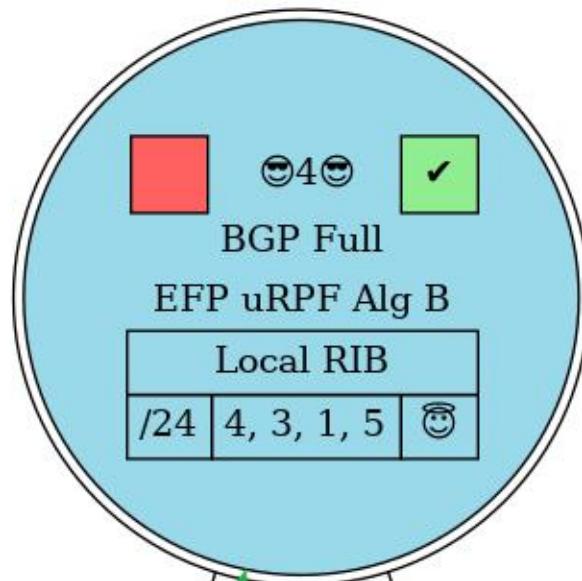
(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)



(efp_b_001 Ground Truth)
Export 2 some passing for EFP Alg B (fails for Alg A)

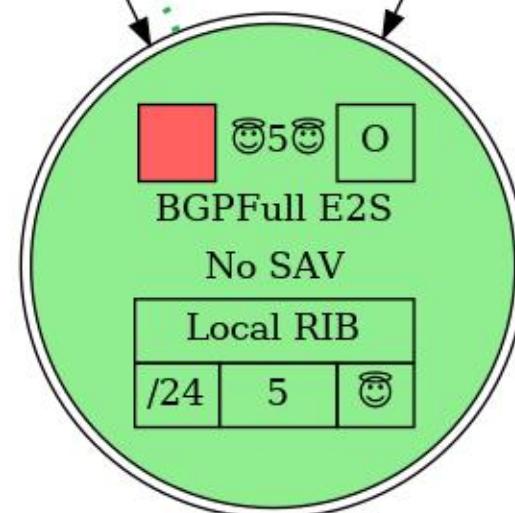
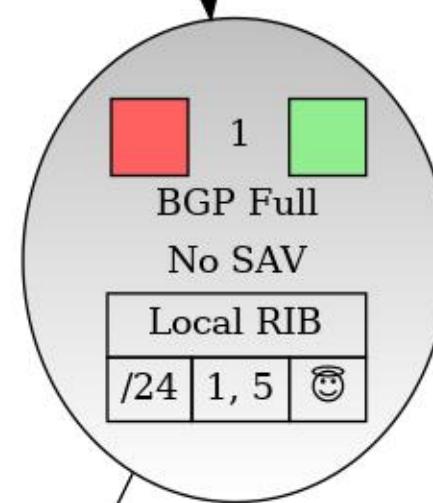
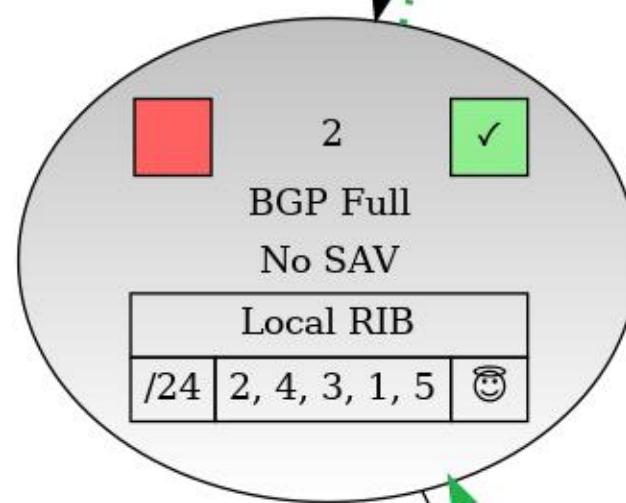
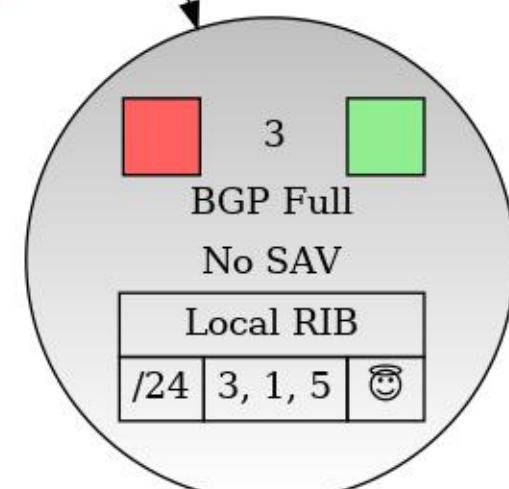
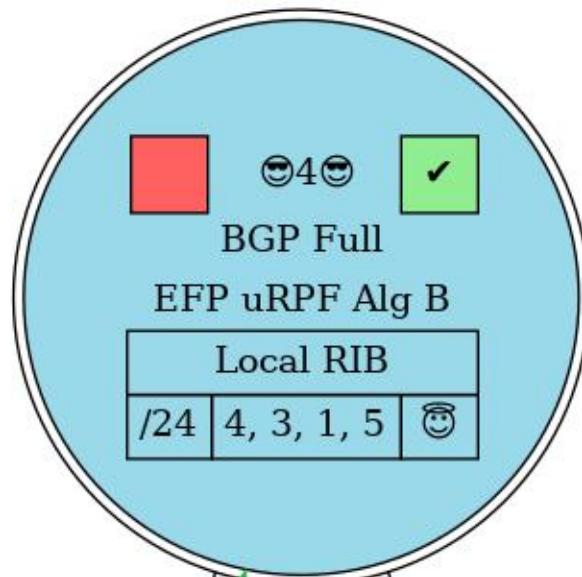
(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)

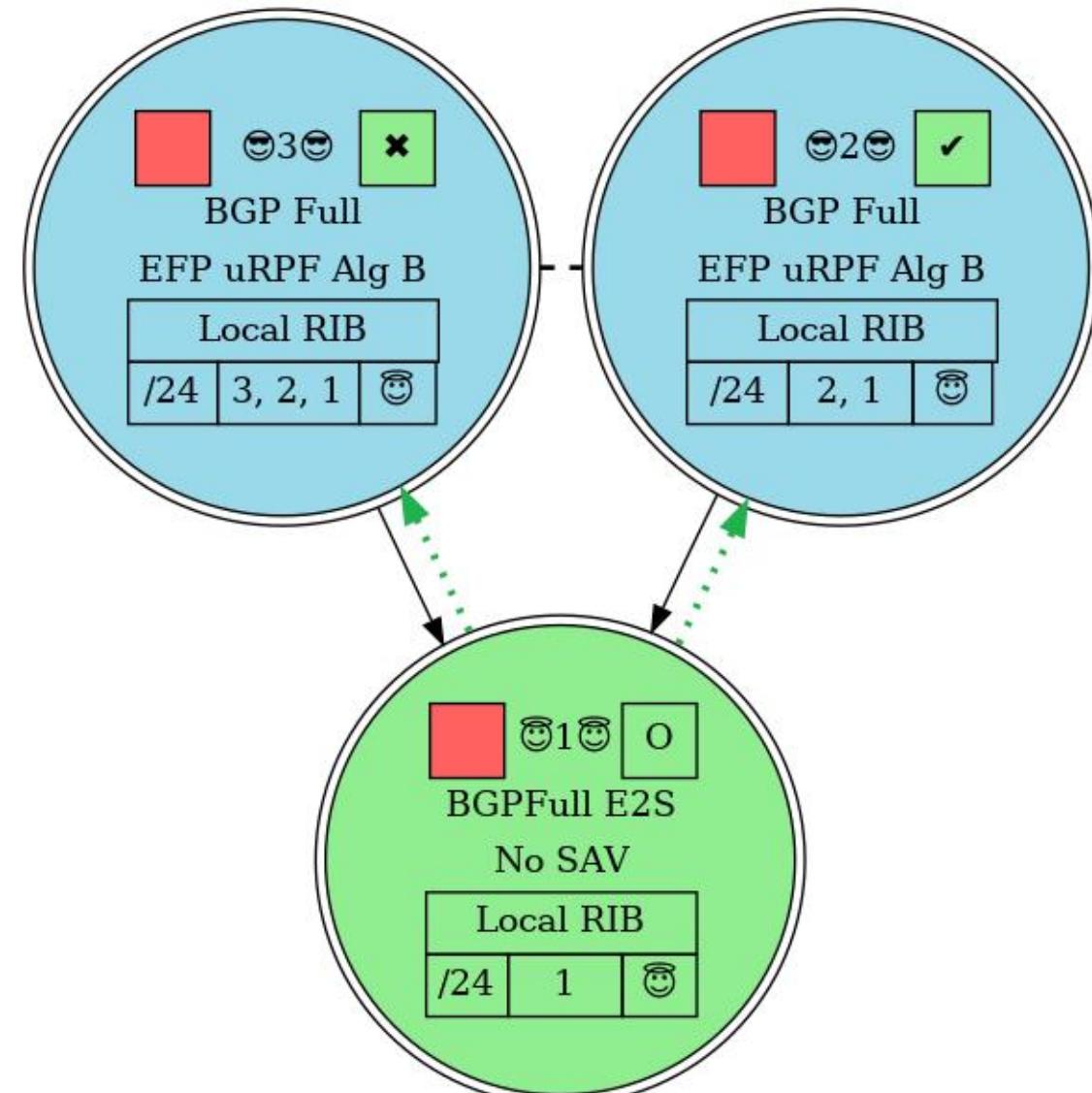


(efp_b_001)
Export 2 some passing for EFP Alg B (fails for Alg A)

(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)

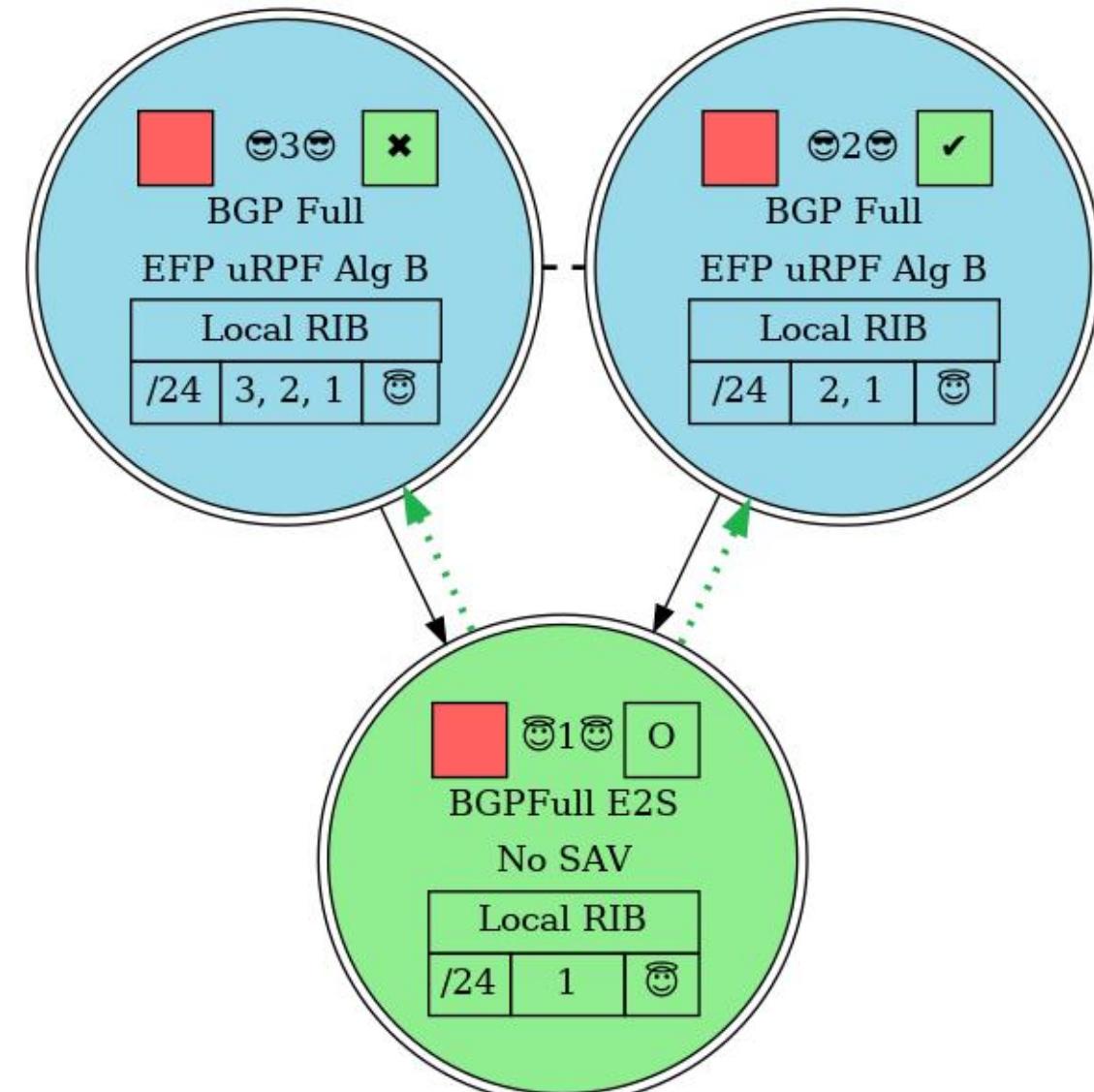


(efp_b_002 Ground Truth)
Basic Export to Some

(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)



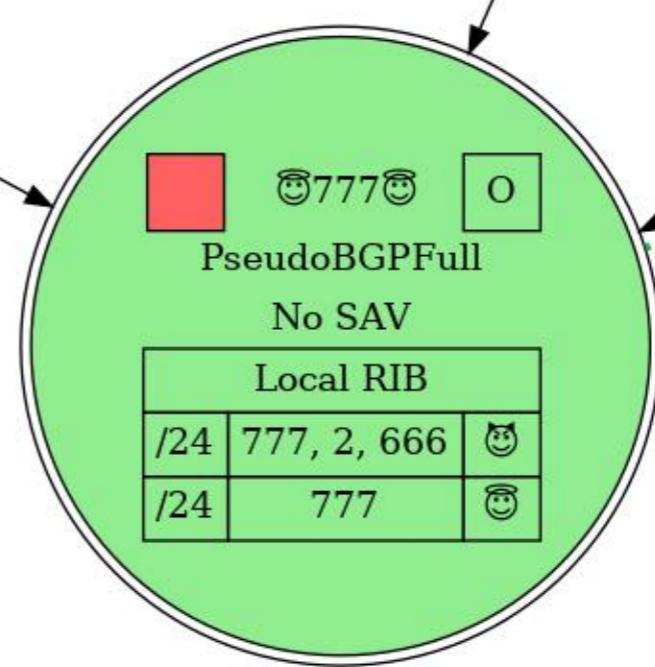
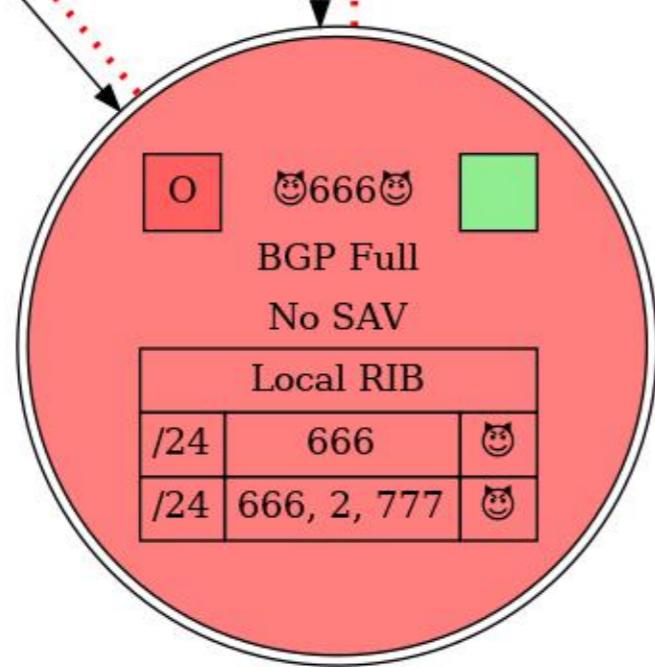
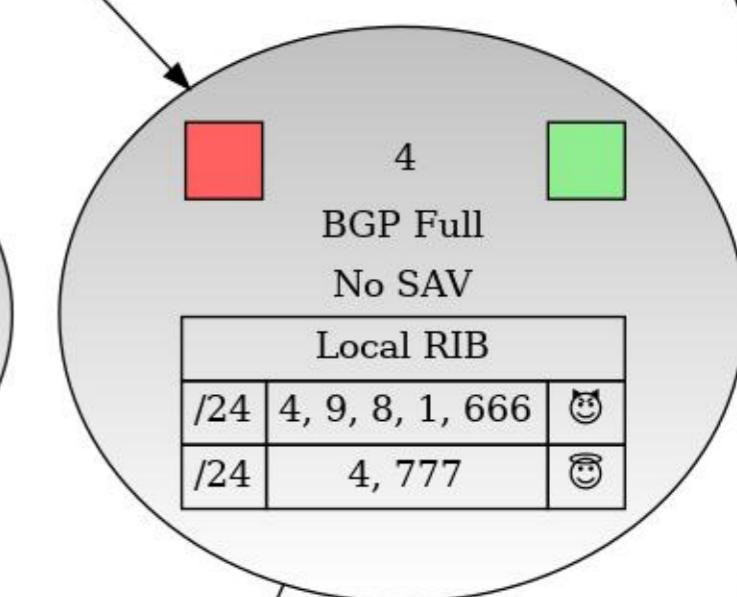
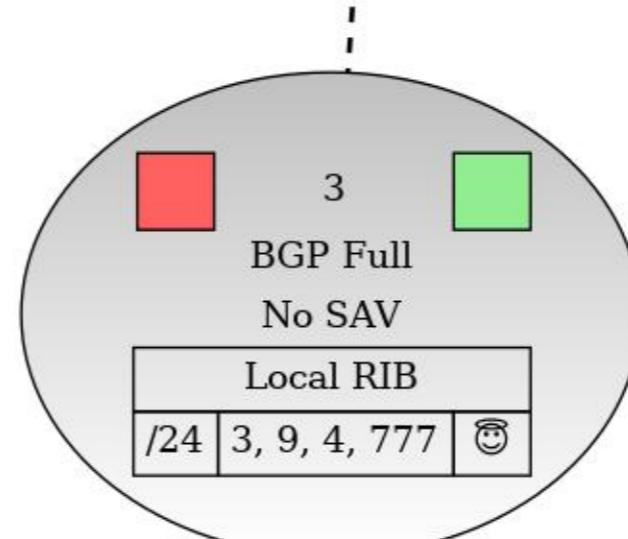
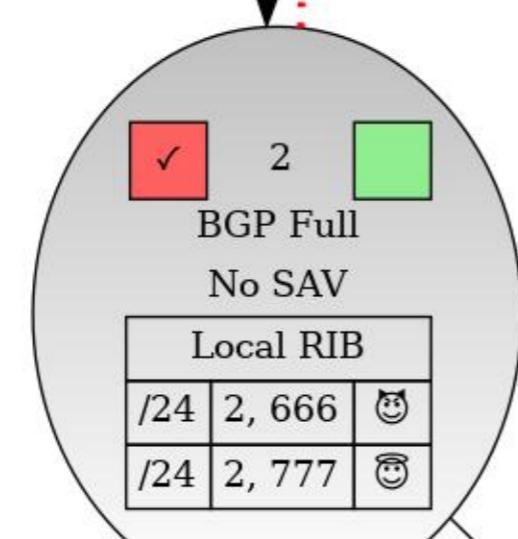
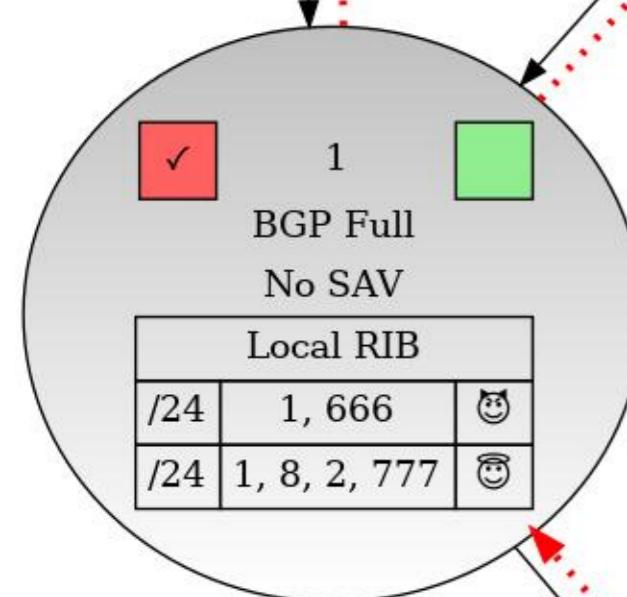
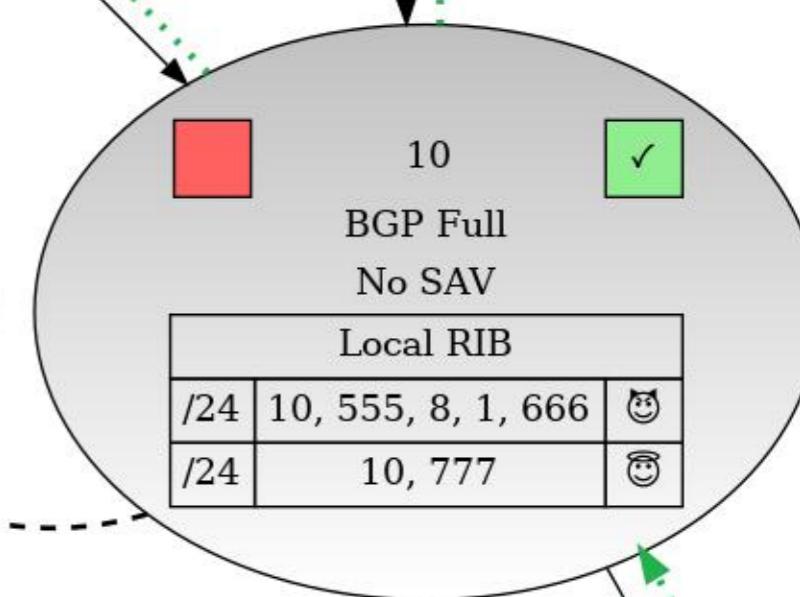
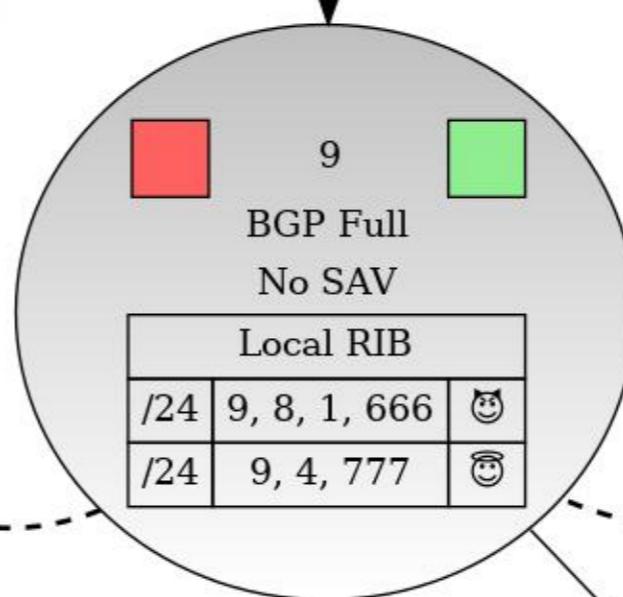
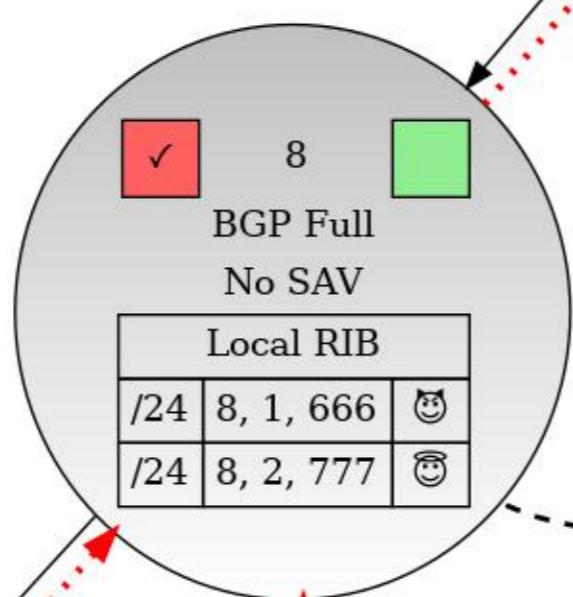
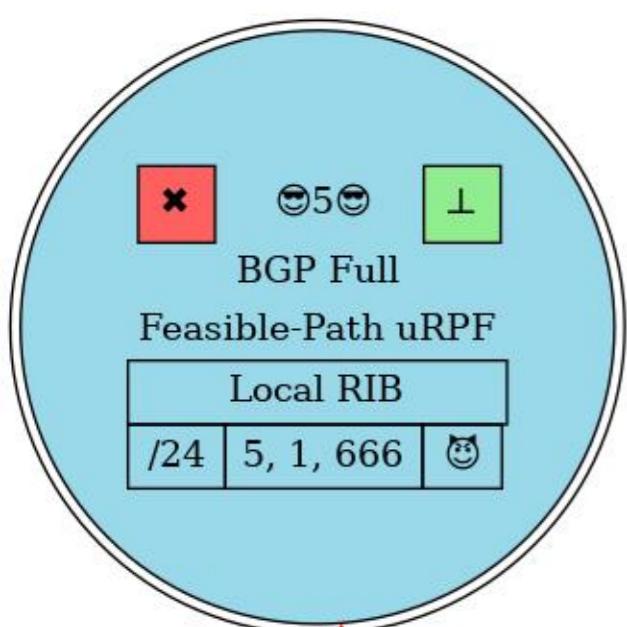
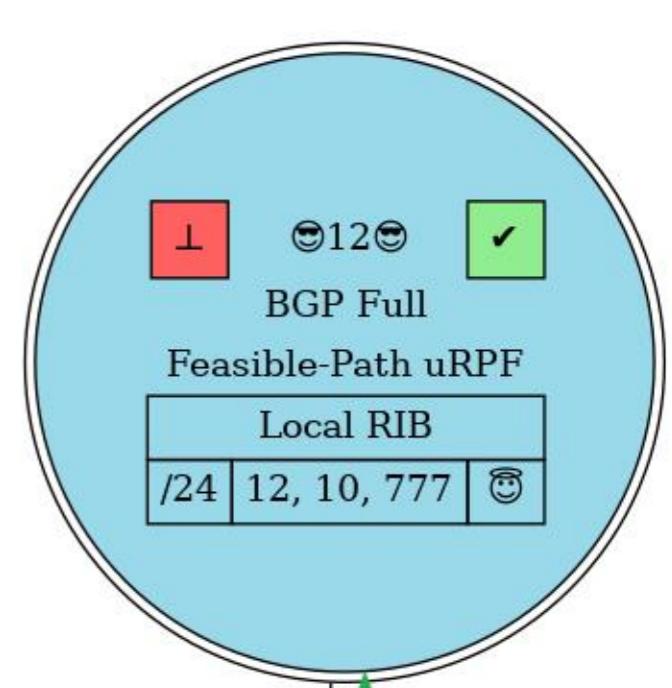
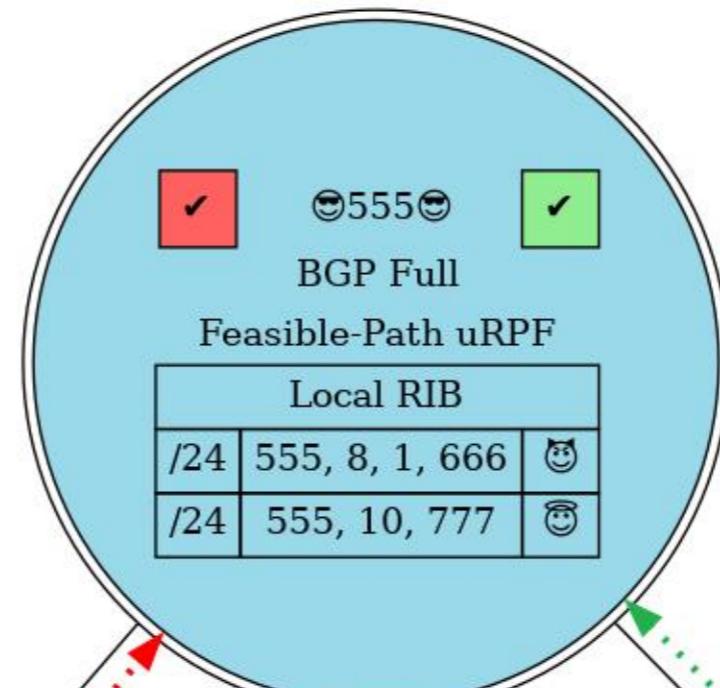
(efp_b_002)
Basic Export to Some

(Data Plane Outcomes)

(Attacker Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |

(Victim Outcomes)



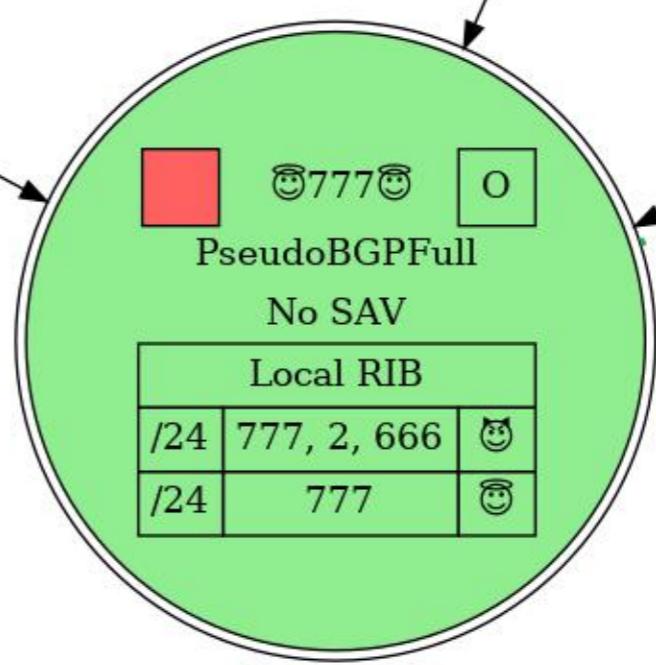
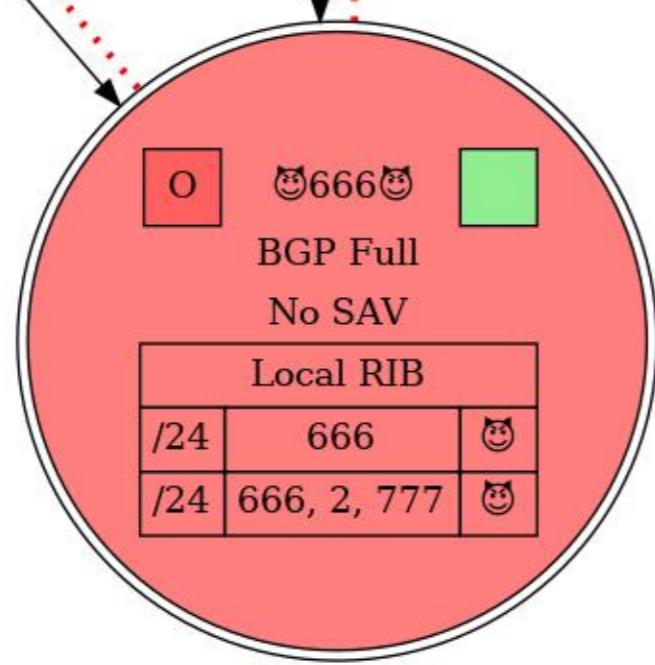
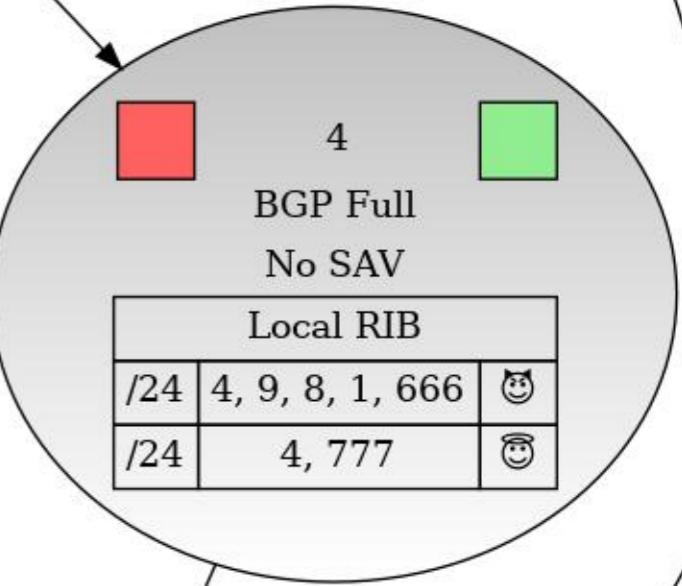
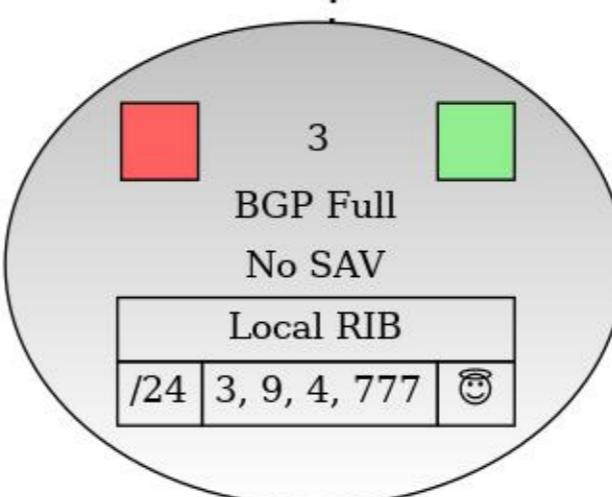
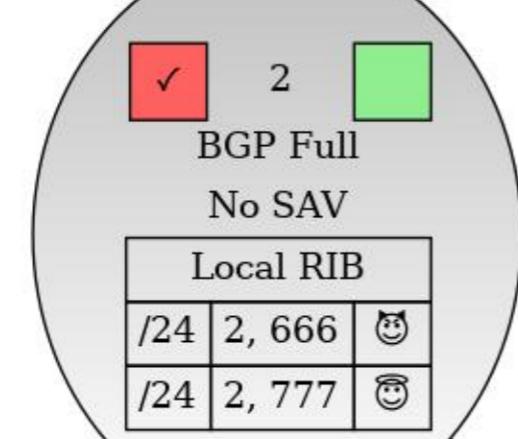
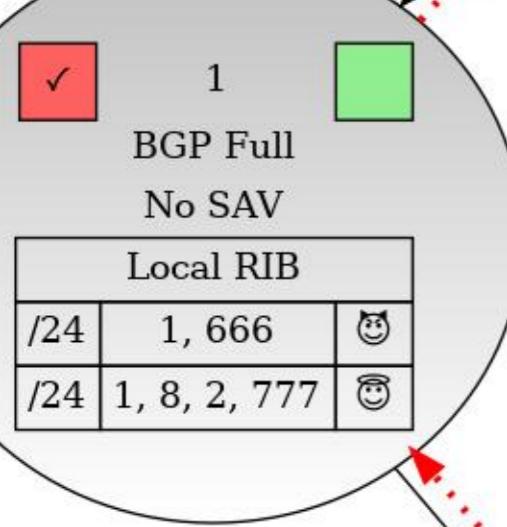
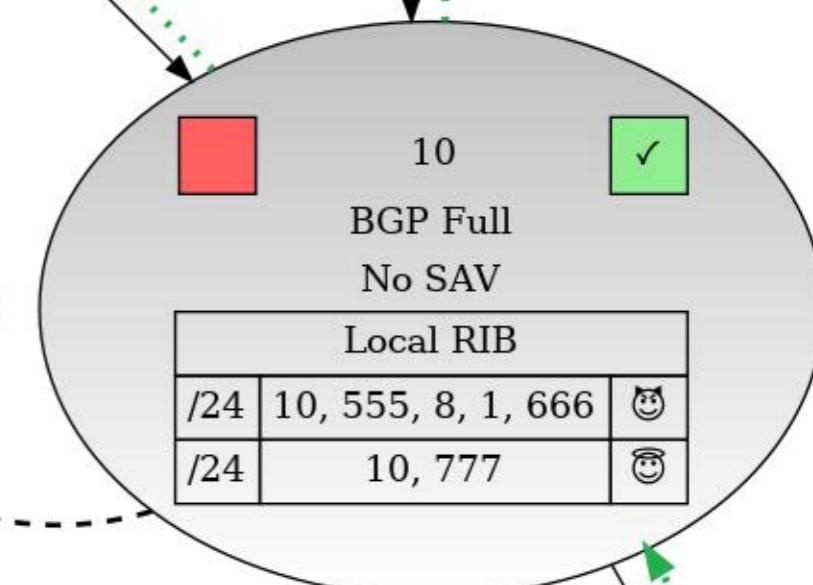
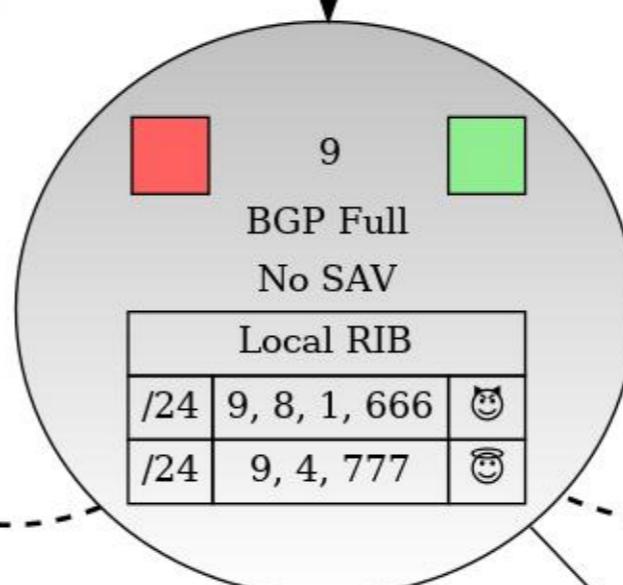
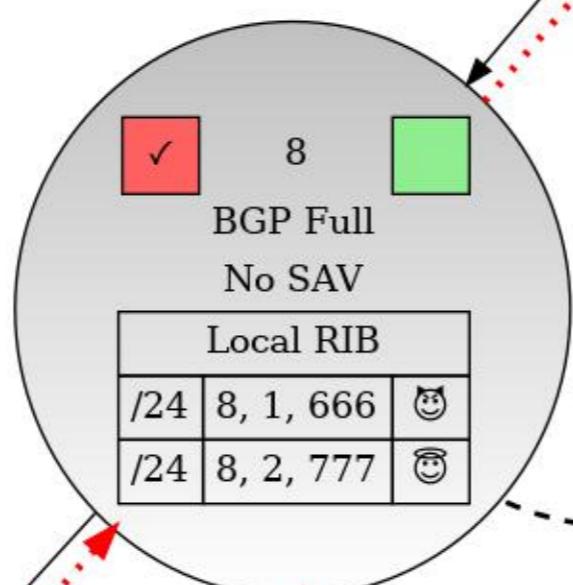
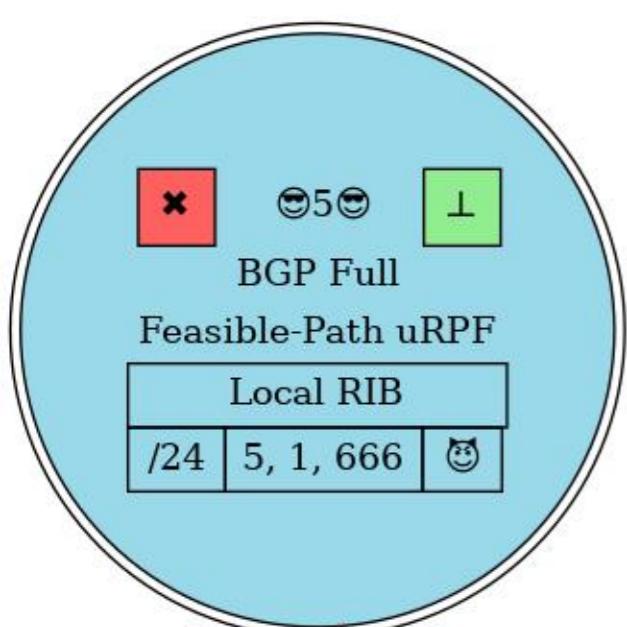
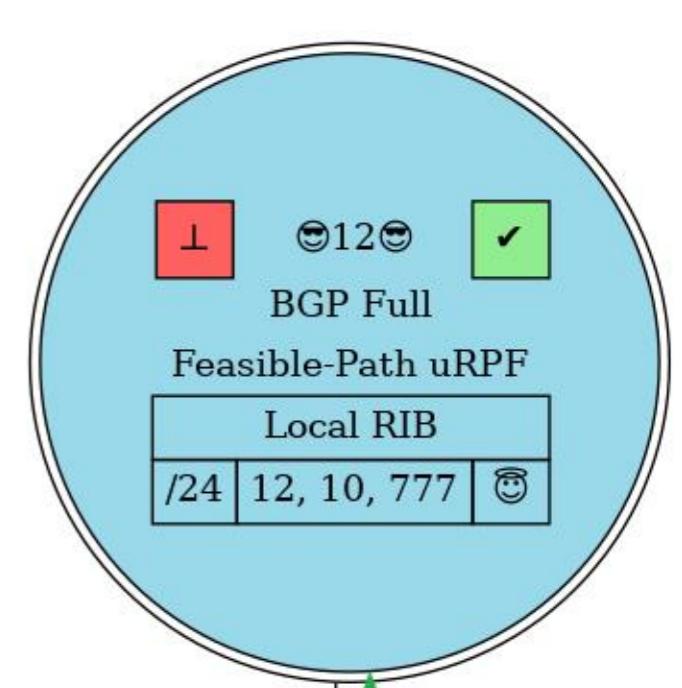
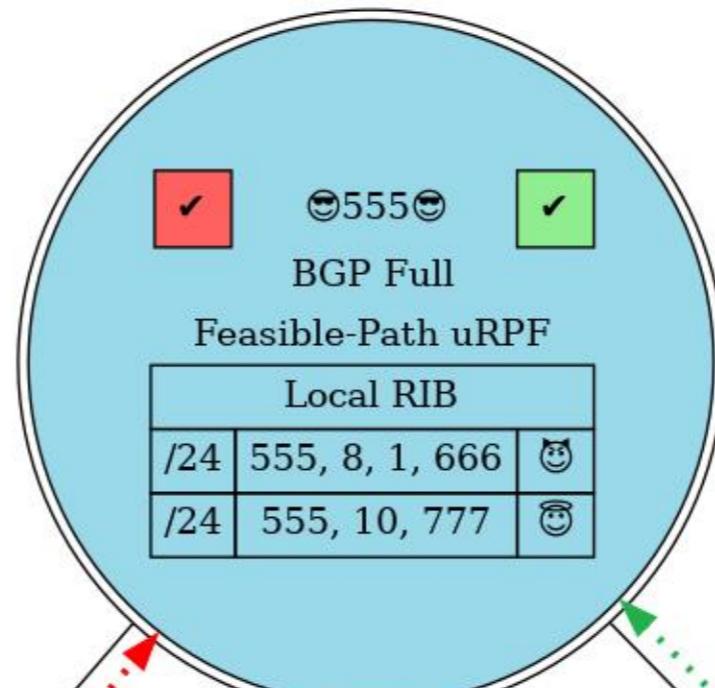
(fp_000 Ground Truth)
Three reflectors running Feasible Path uRPF, one disconnected from both victim and attacker

(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |



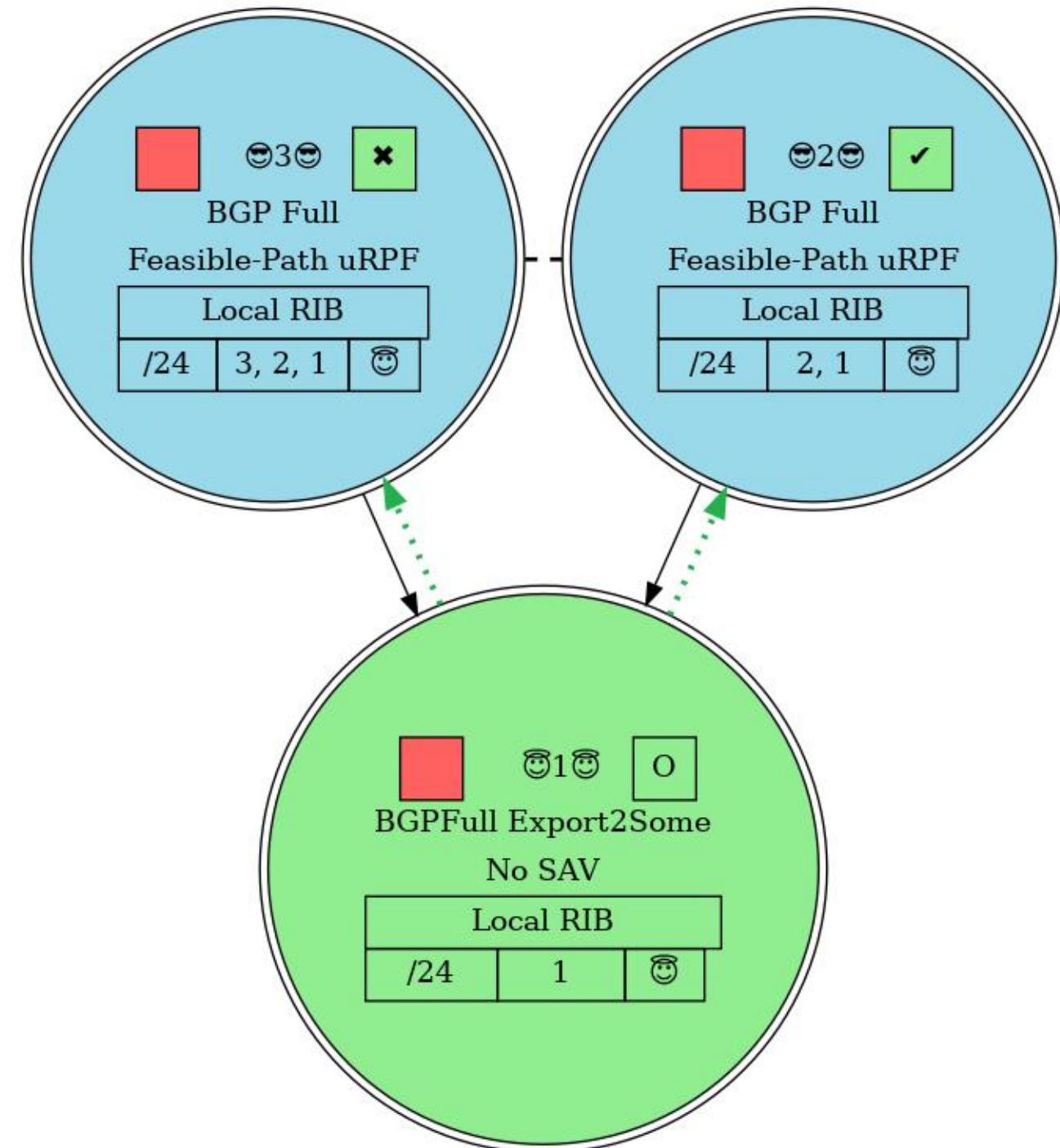
(fp_000)
Three reflectors running Feasible Path uRPF, one disconnected from both victim and attacker

(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |



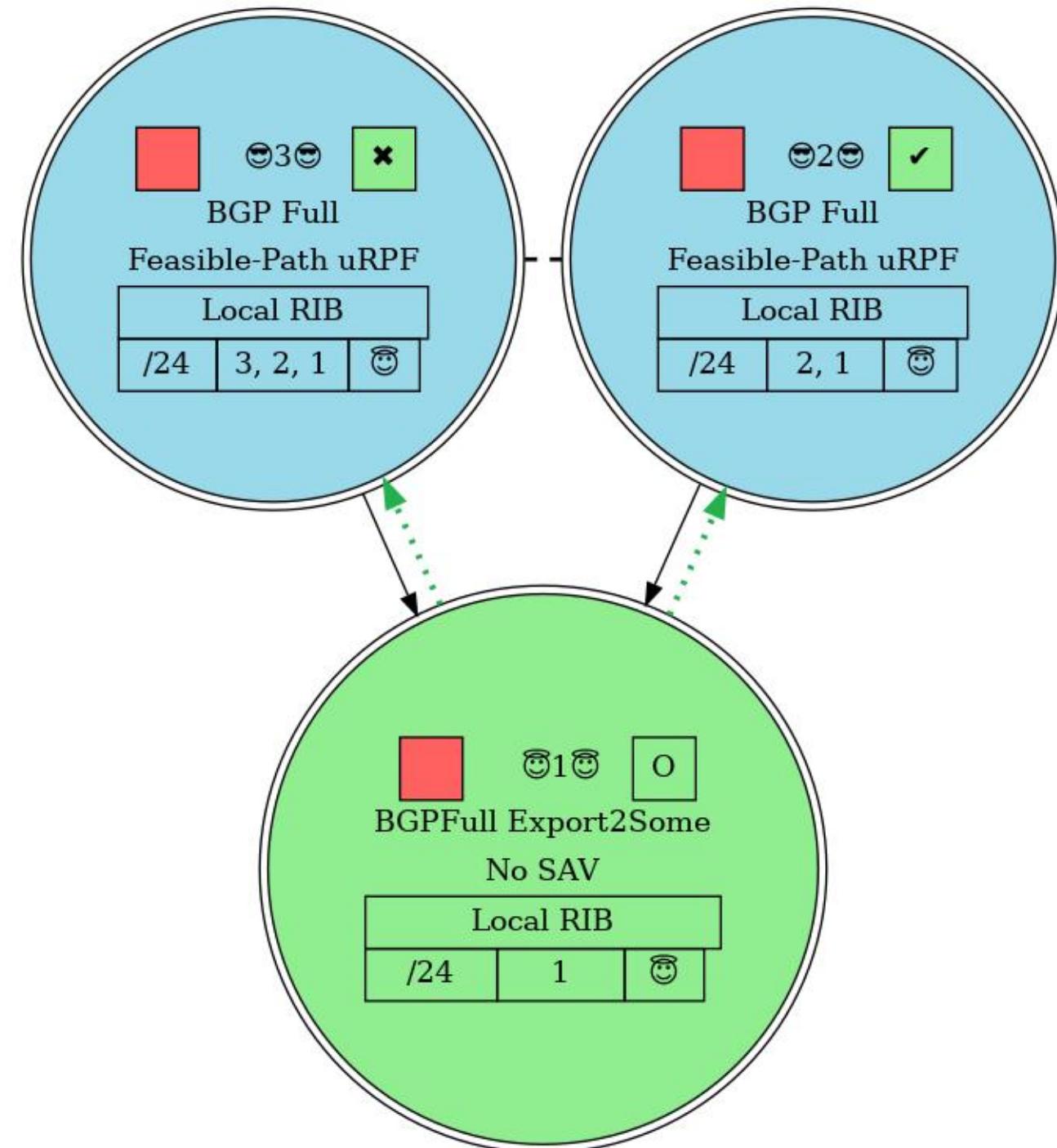
(fp_001 Ground Truth)
Simple Export-to-Some with Feasible Path uRPF

(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

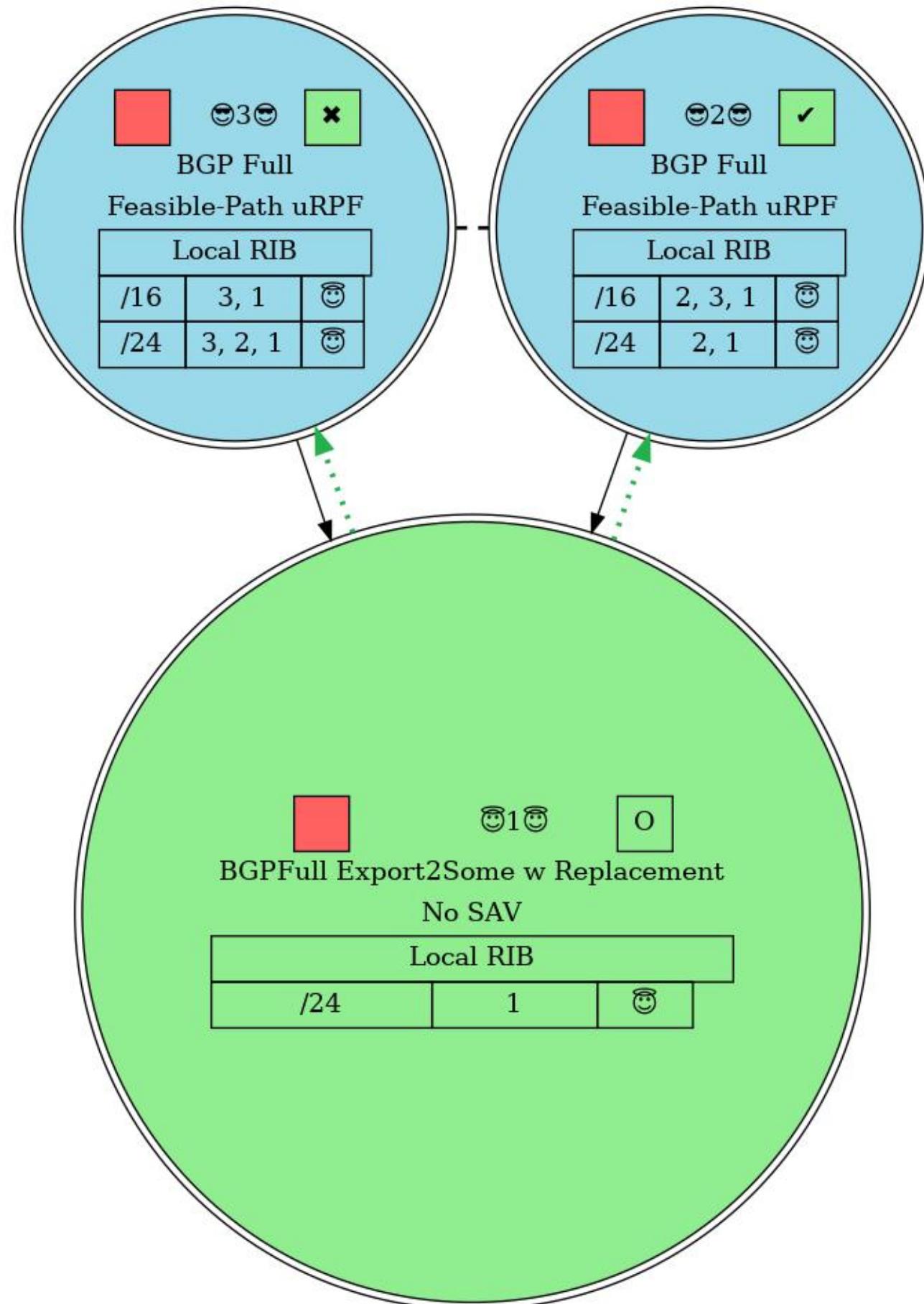
| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |



(fp_001)
Simple Export-to-Some with Feasible Path uRPF

(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |



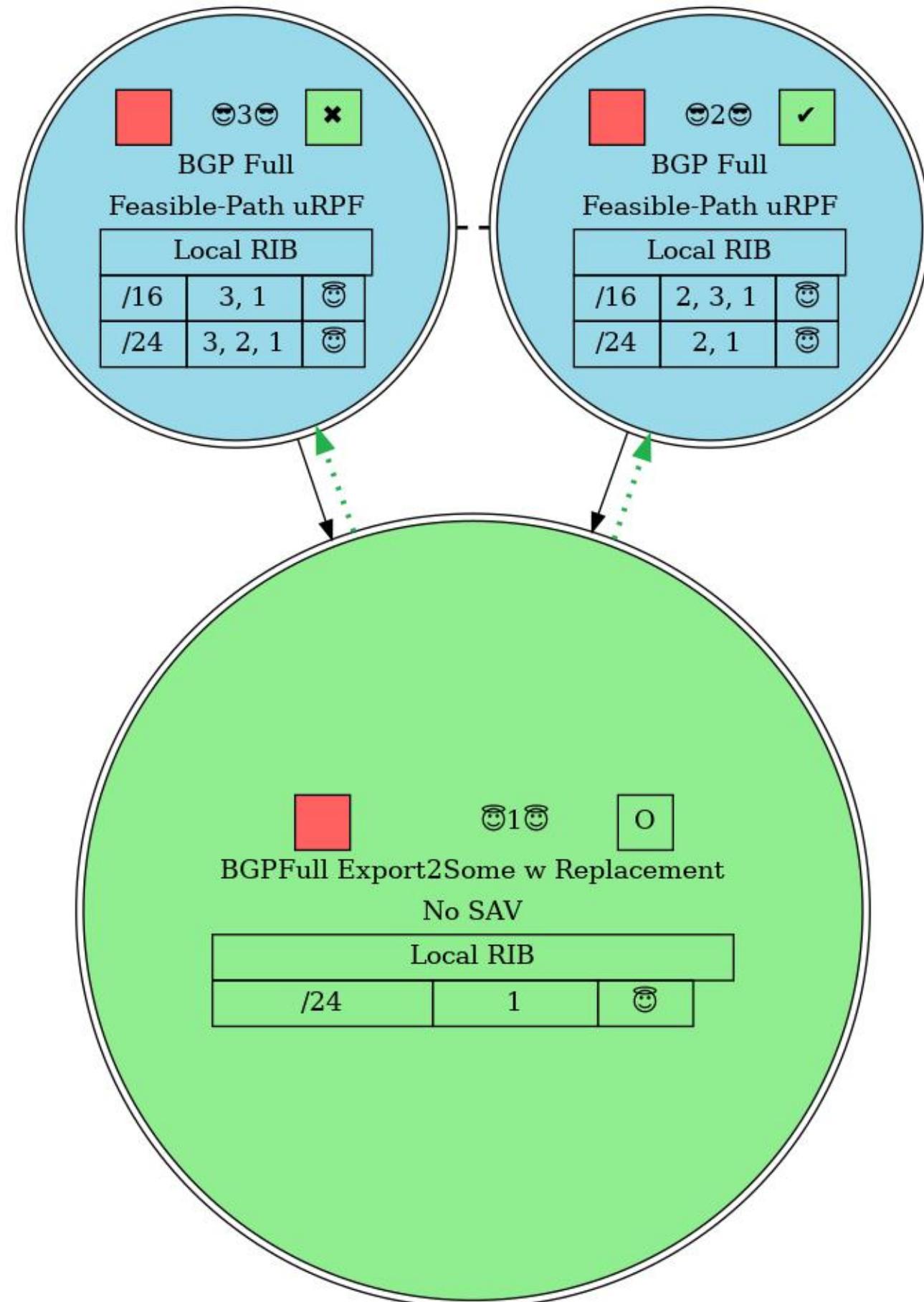
(fp_002 Ground Truth)
Simple Export-to-Some with Replacement with Feasible Path uRPF

(Data Plane Outcomes)

(Attacker Outcomes)

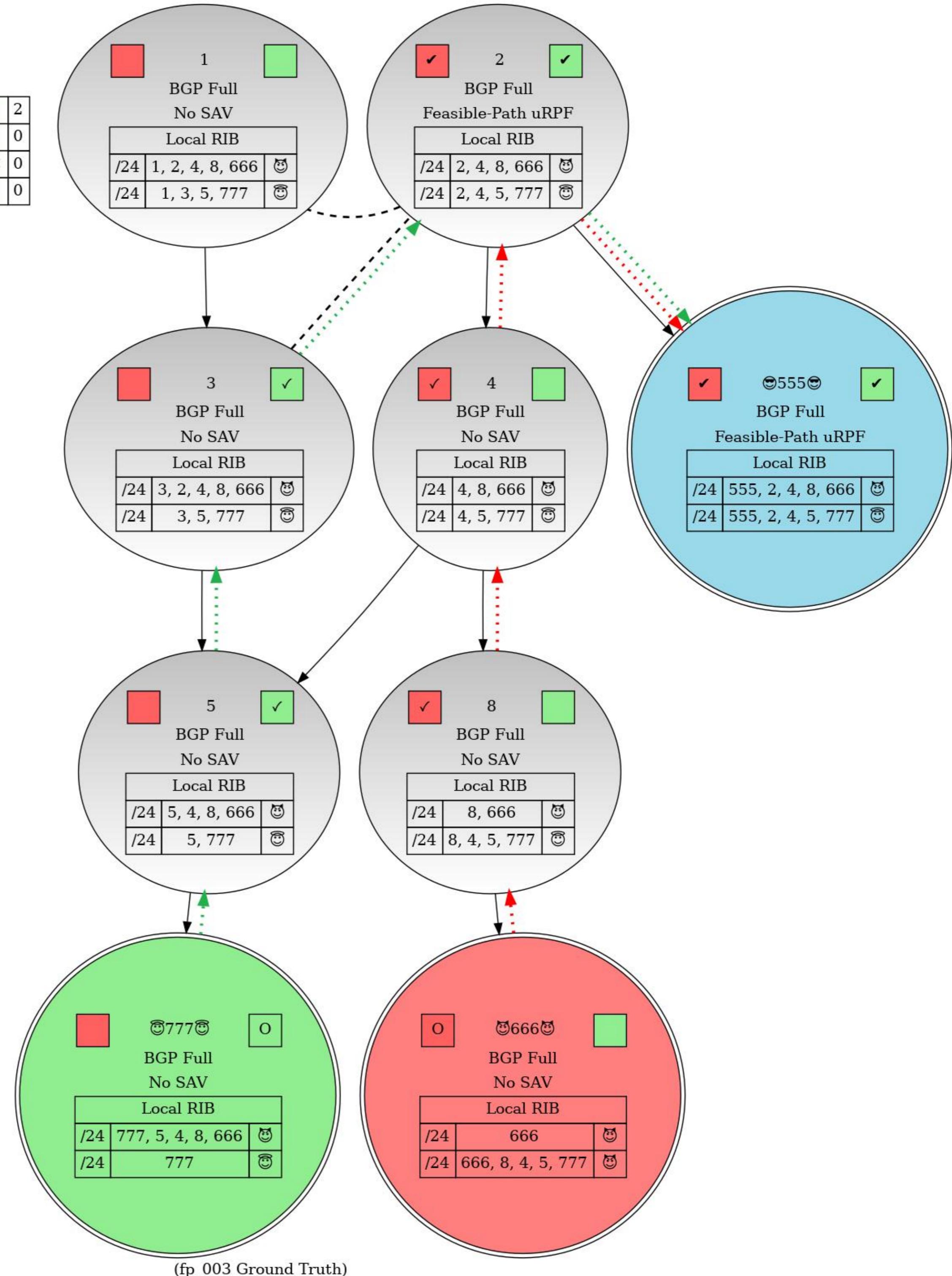
| | (Victim Outcomes) |
|----------------------|--------------------------|
| ✓ FALSE NEGATIVE ✓ | 0 ✓ TRUE NEGATIVE ✓ 1 |
| ✗ TRUE POSITIVE ✗ | 0 ✗ FALSE POSITIVE ✗ 1 |
| ✗ FILTERED ON PATH ✗ | 0 ✗ FILTERED ON PATH ✗ 0 |
| ⊥ DISCONNECTED ⊥ | 0 ⊥ DISCONNECTED ⊥ 0 |

(Victim Outcomes)



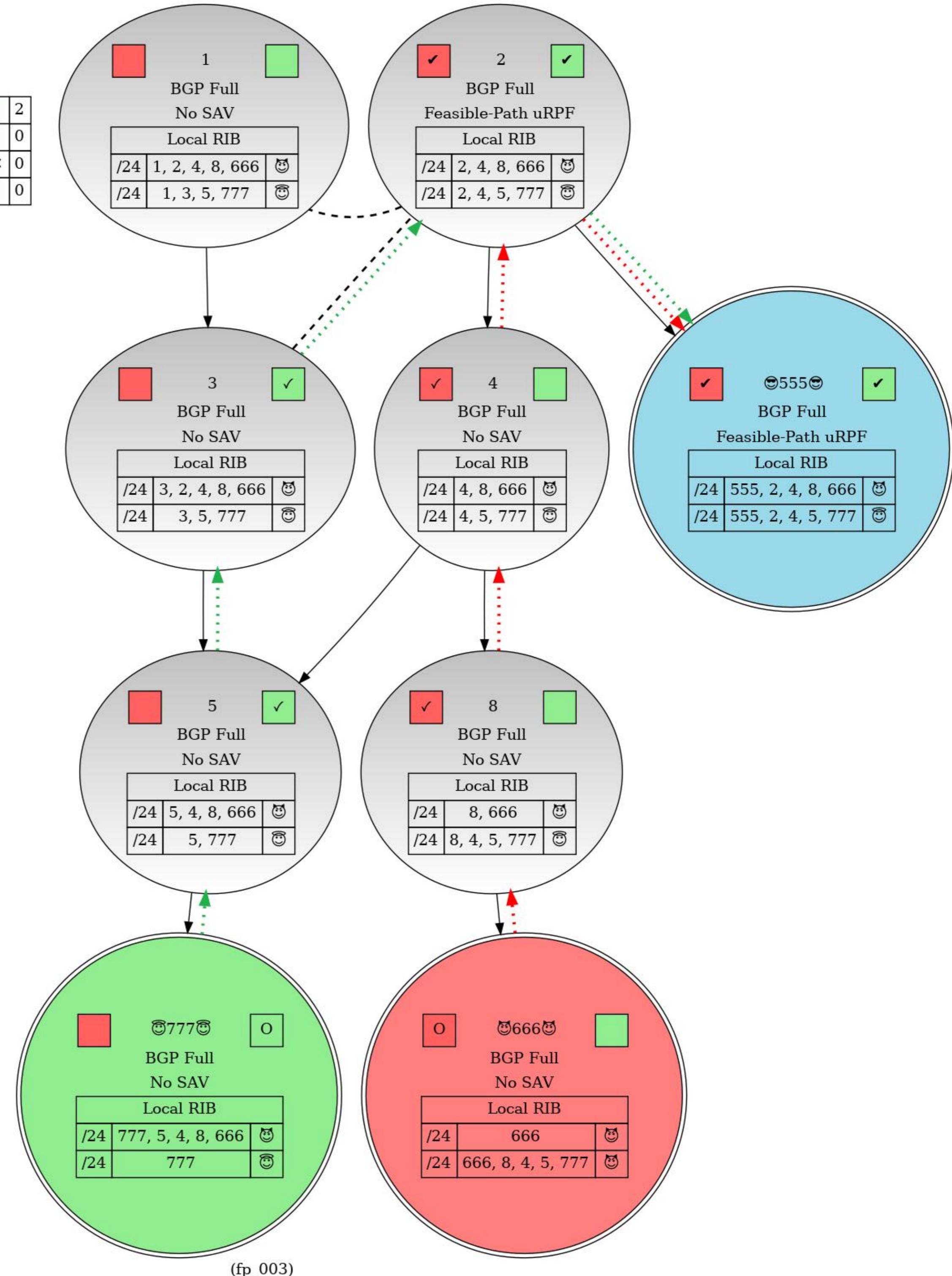
(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 2 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |



(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 2 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

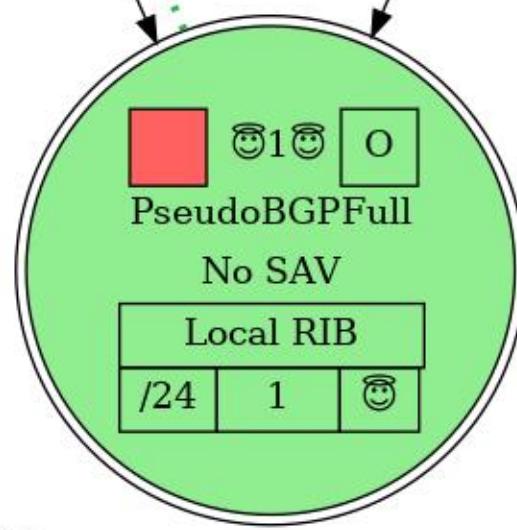
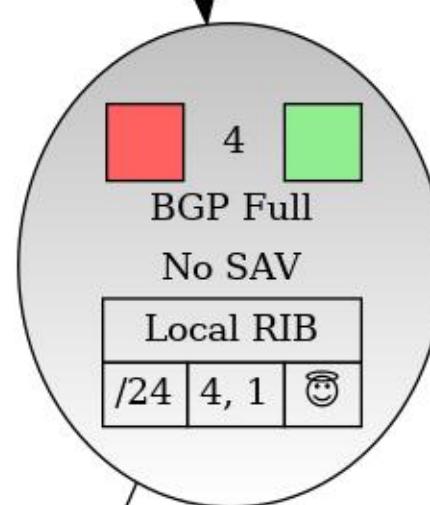
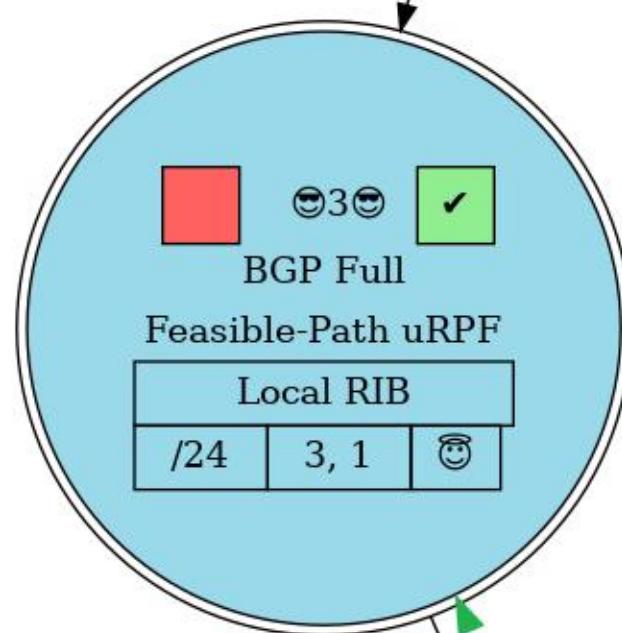
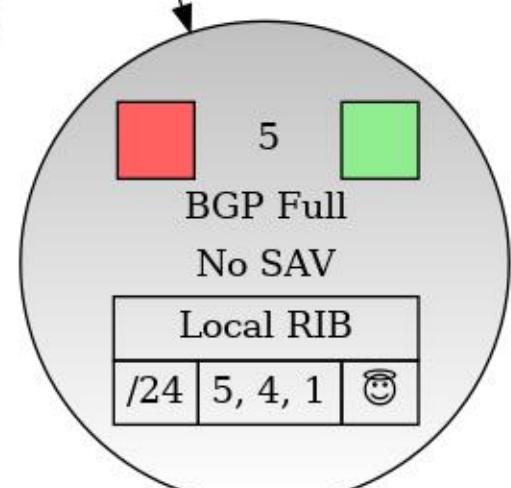
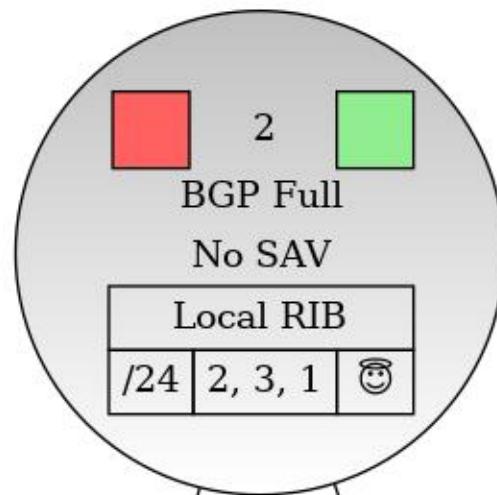


(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |



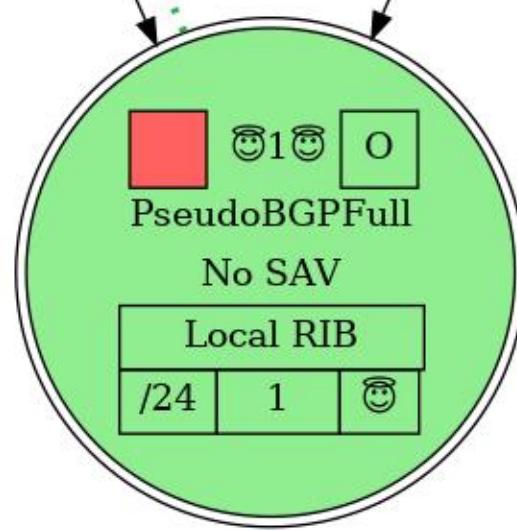
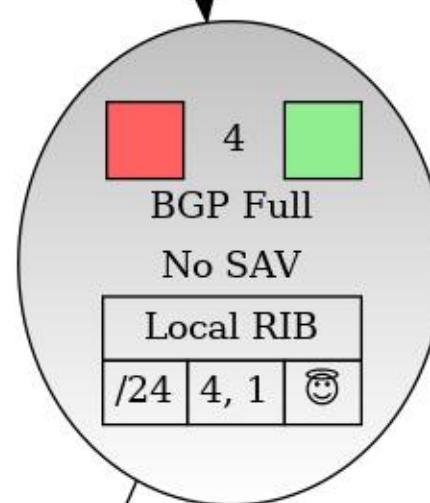
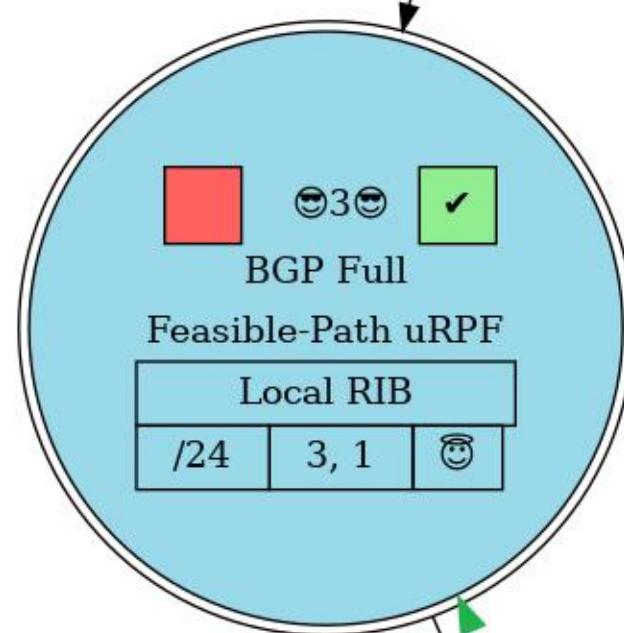
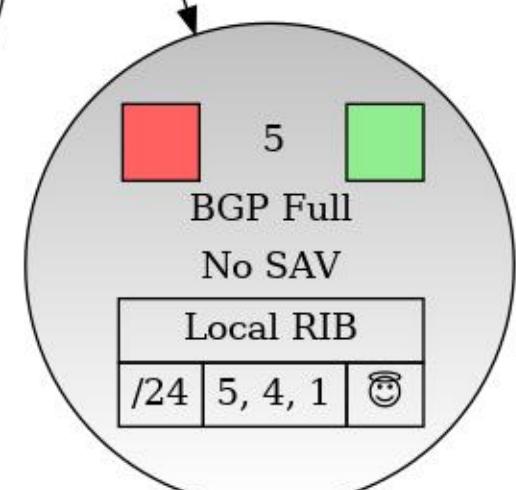
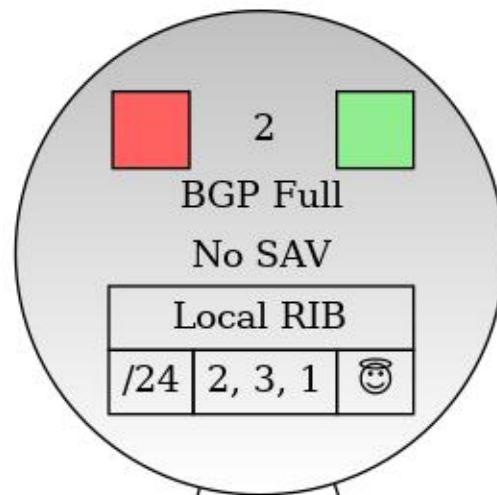
(fp_004 Ground Truth)
False positive test for Feasible Path uRPF with Export-to-All

(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |



(fp_004)
False positive test for Feasible Path uRPF with Export-to-All

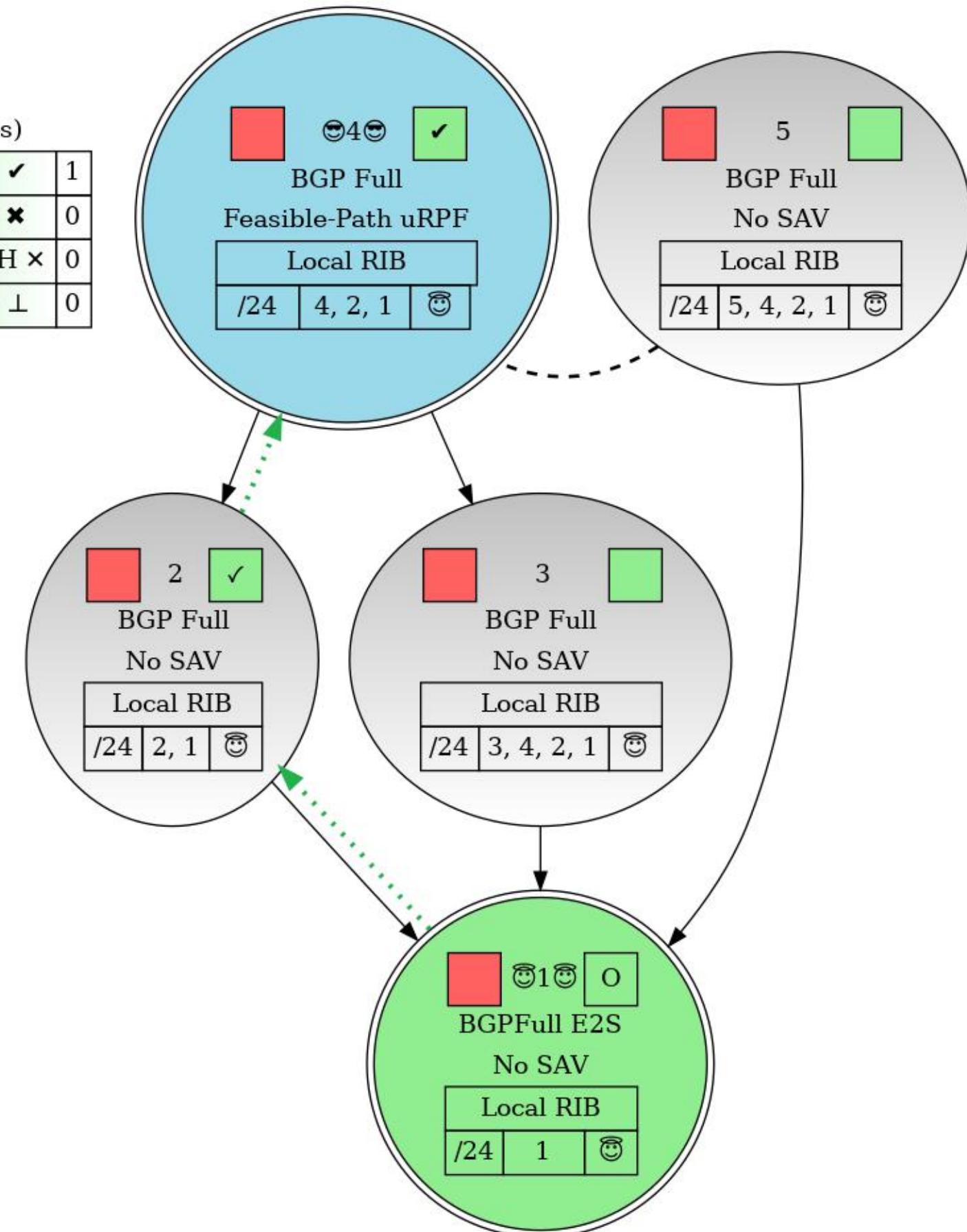
(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)



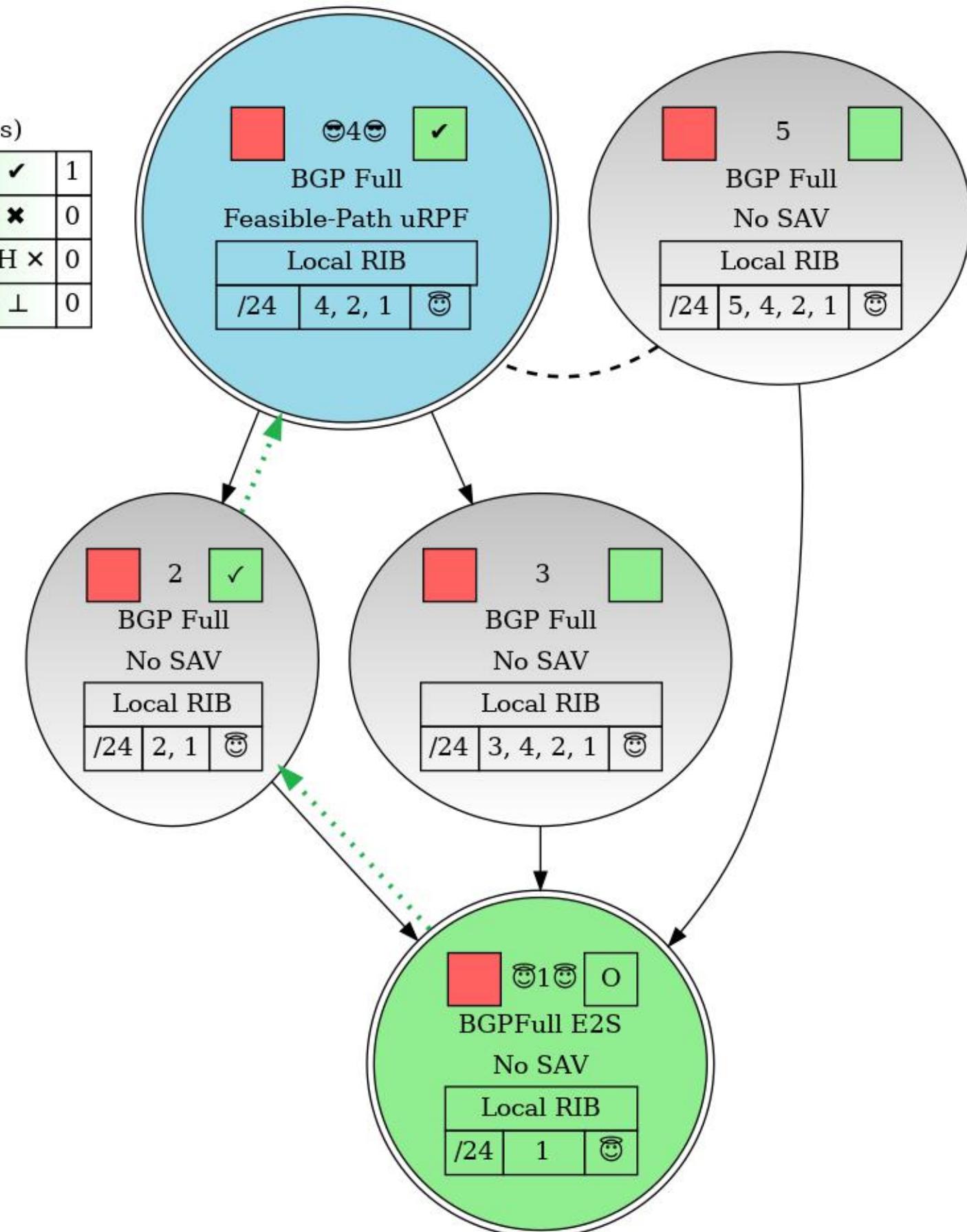
(fp_005 Ground Truth)

(Data Plane Outcomes)

(Attacker Outcomes)

| | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

ROAs (prefix, origin, max_len)

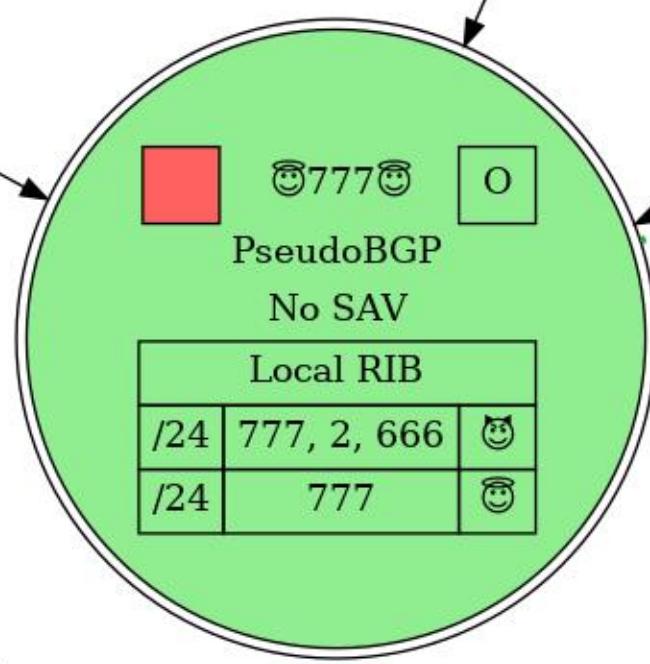
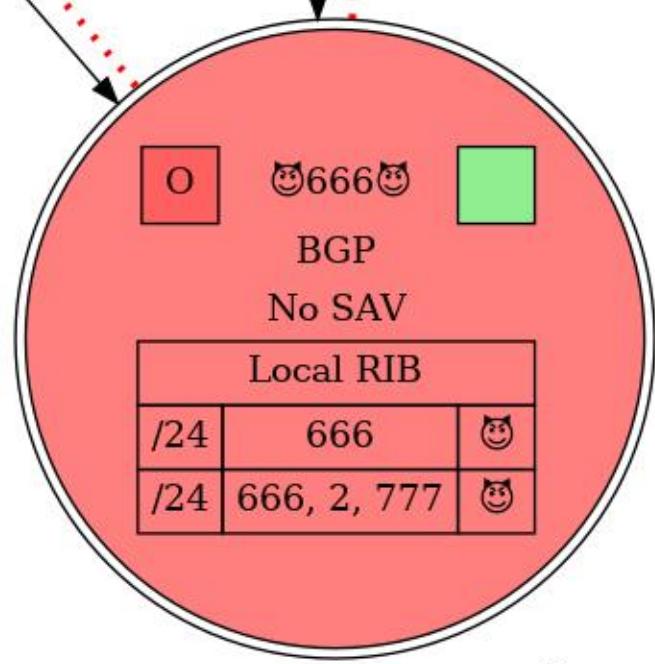
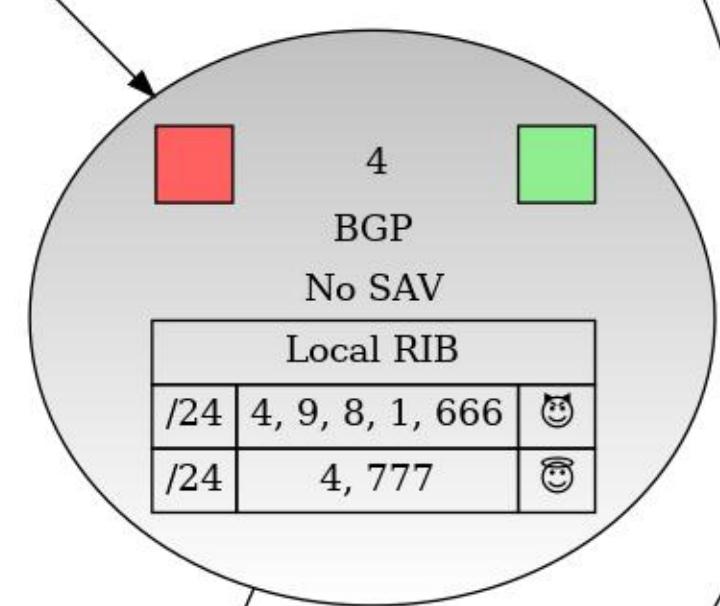
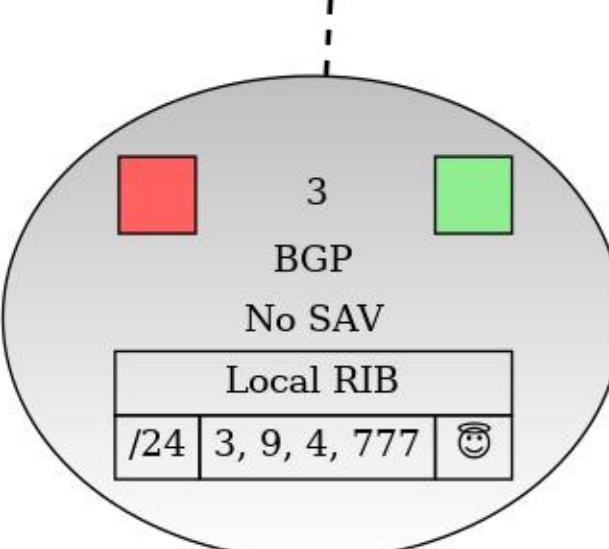
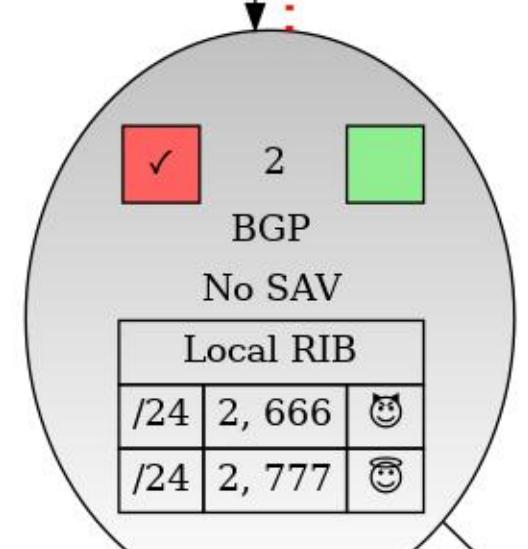
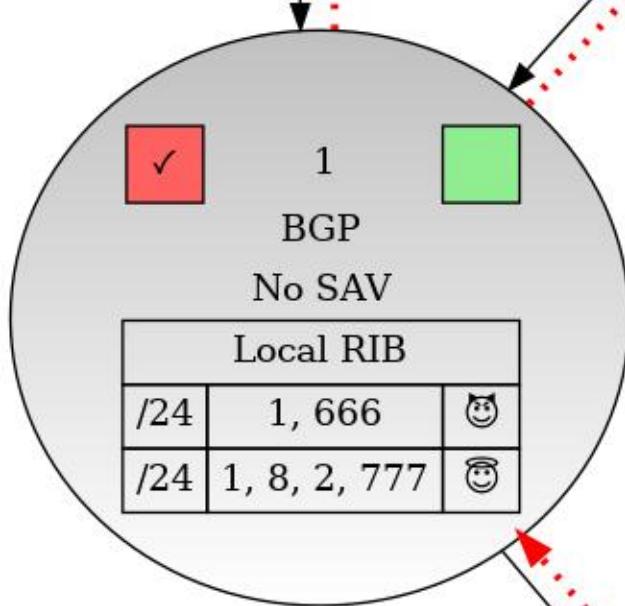
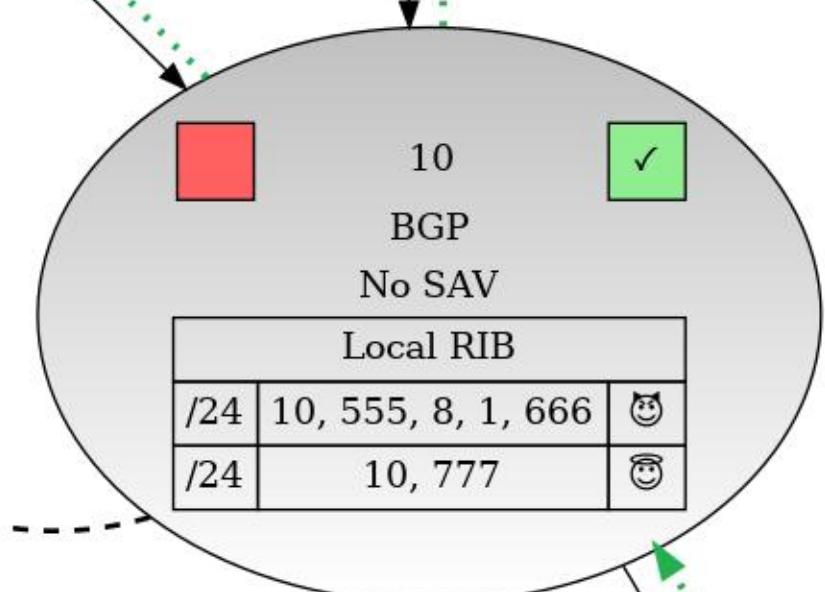
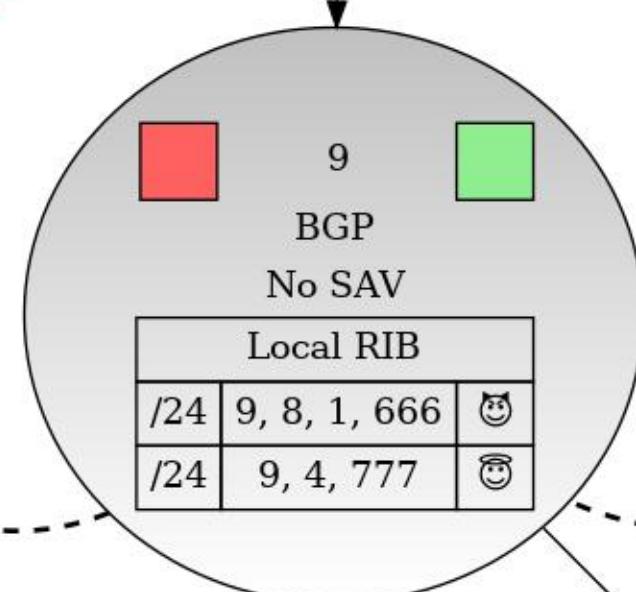
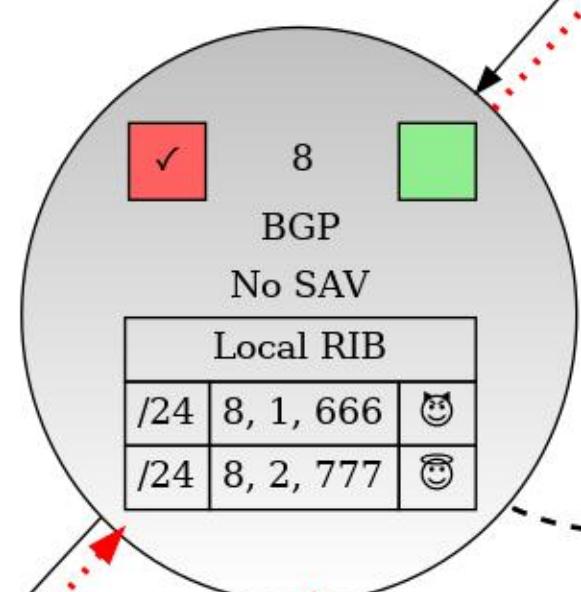
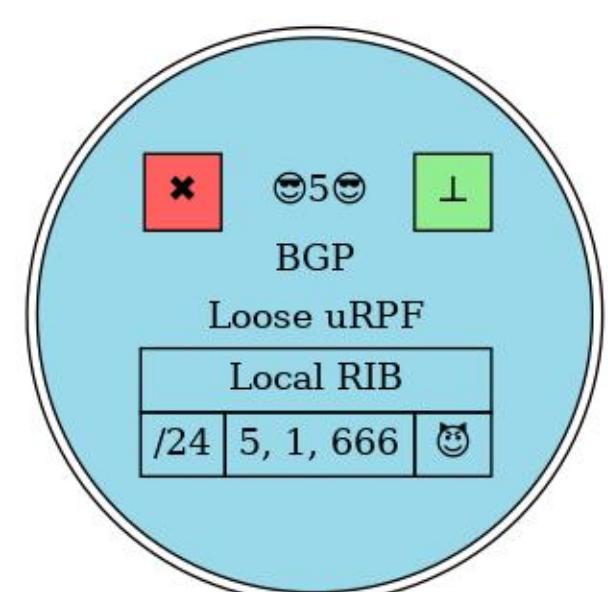
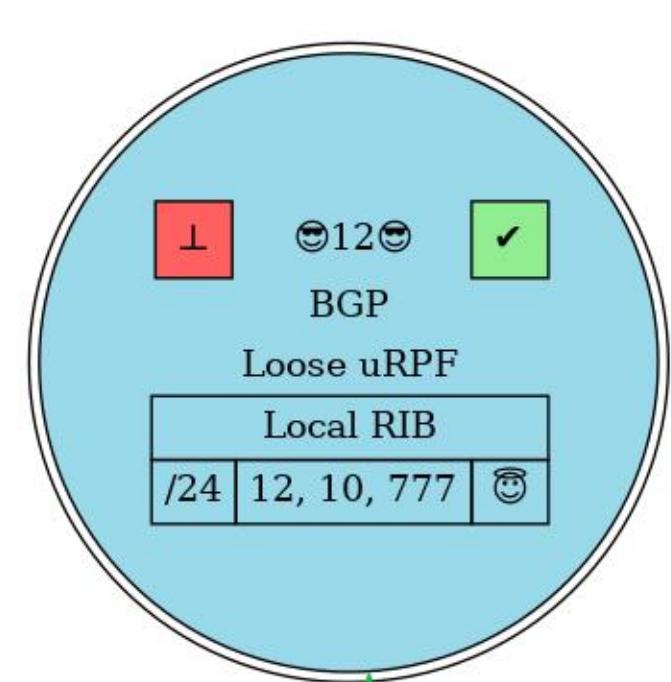
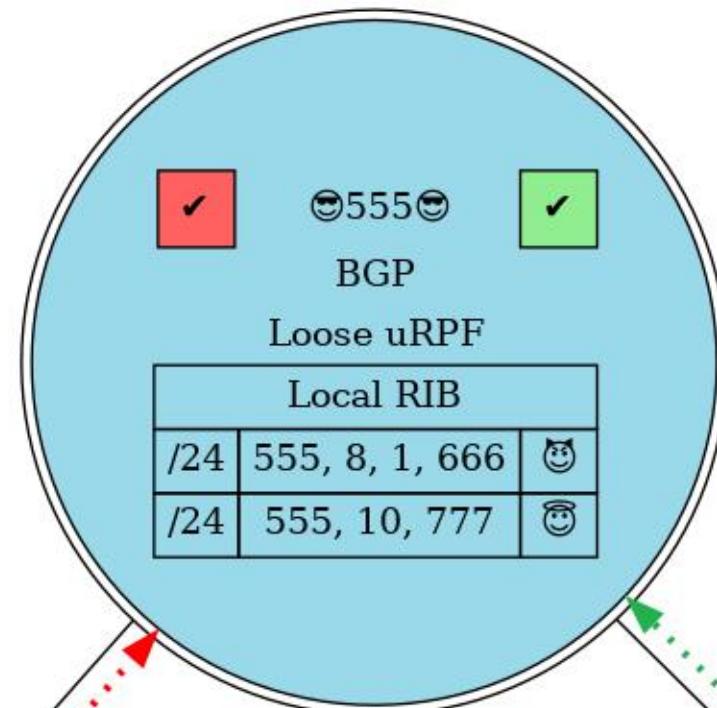


(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |



(loose 000 Ground Truth)

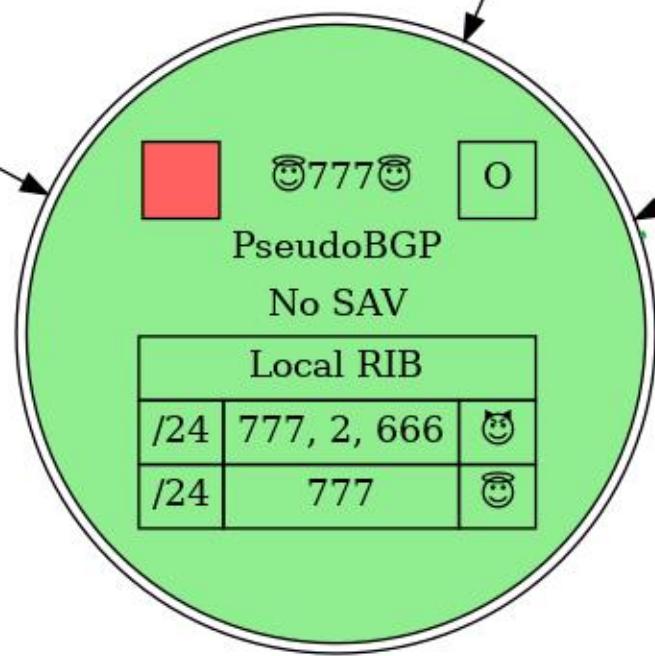
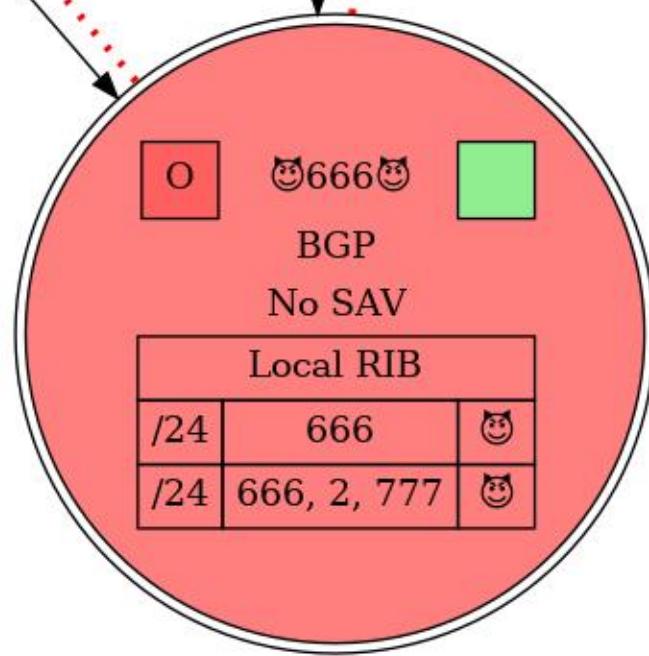
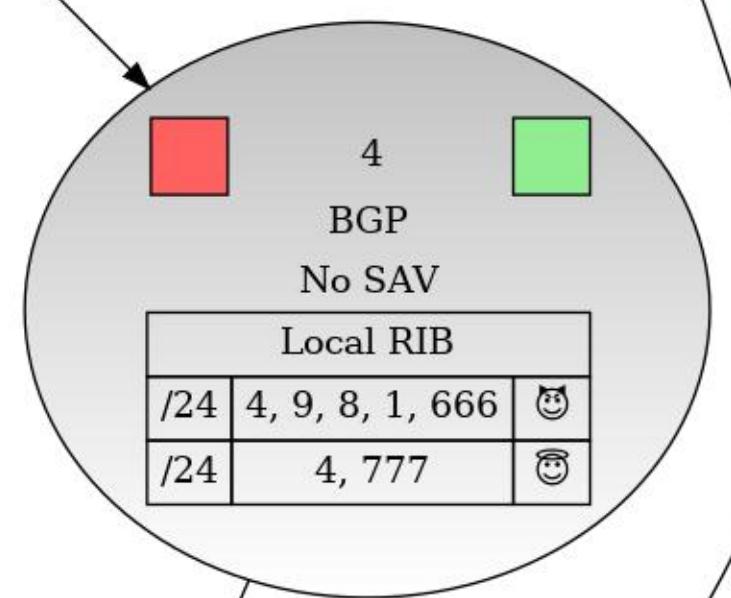
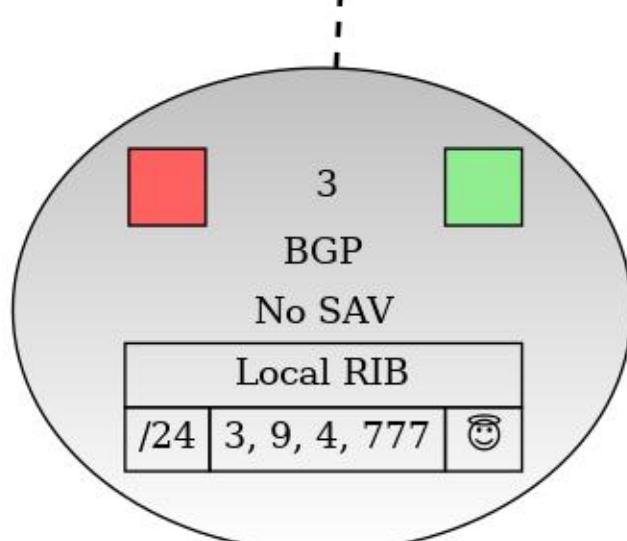
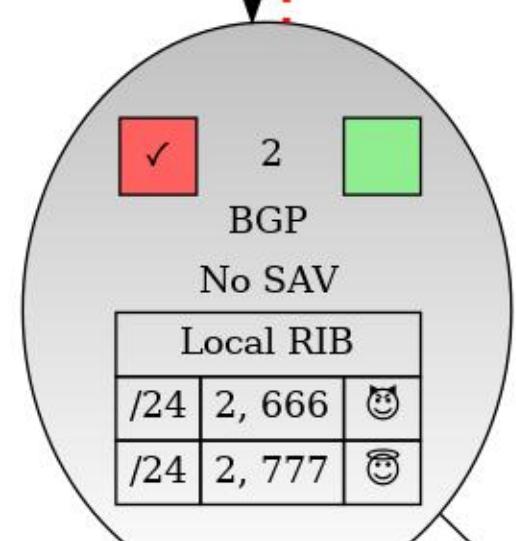
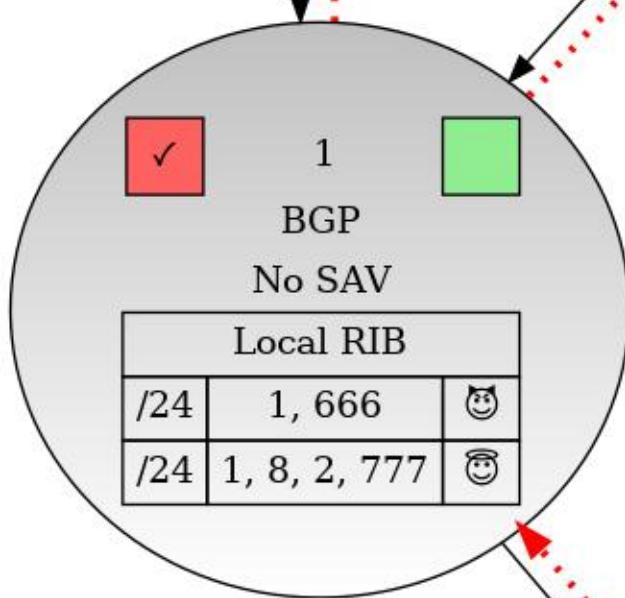
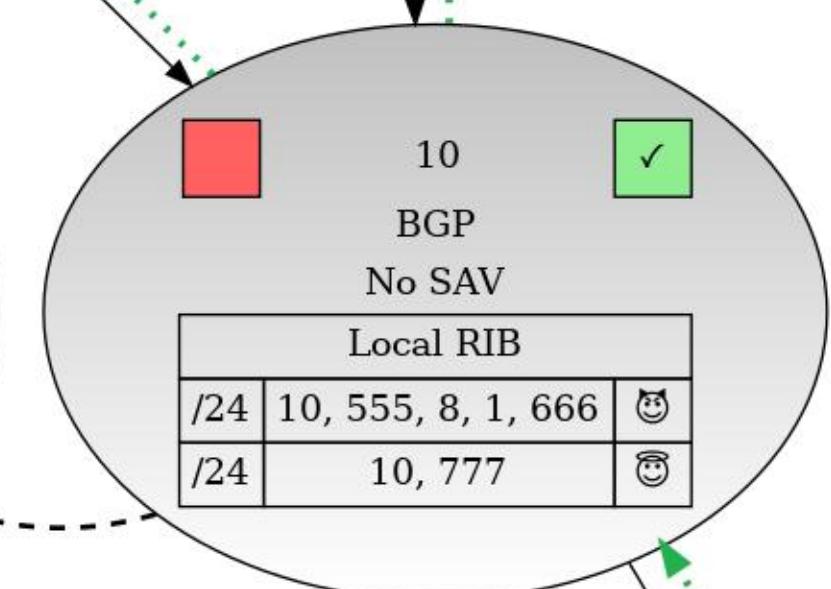
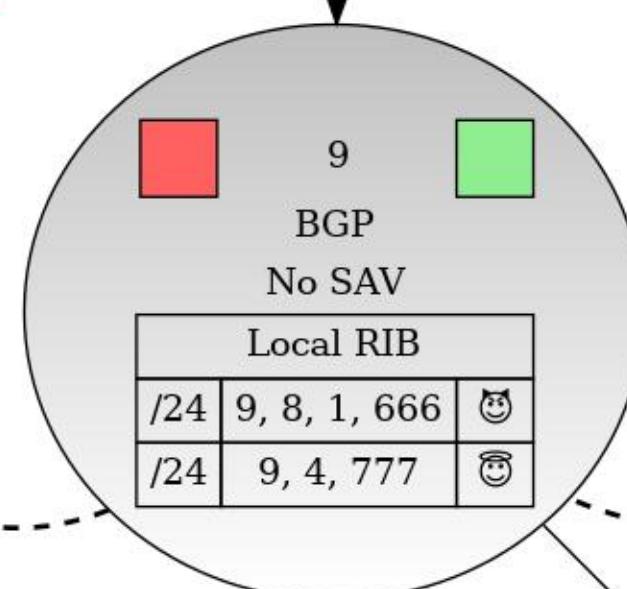
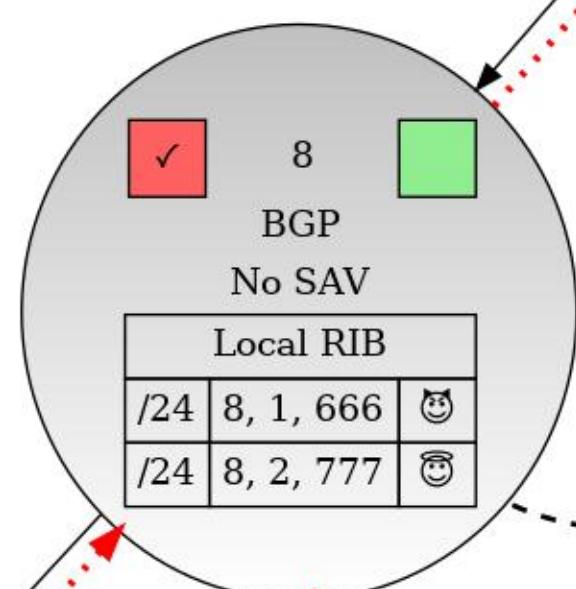
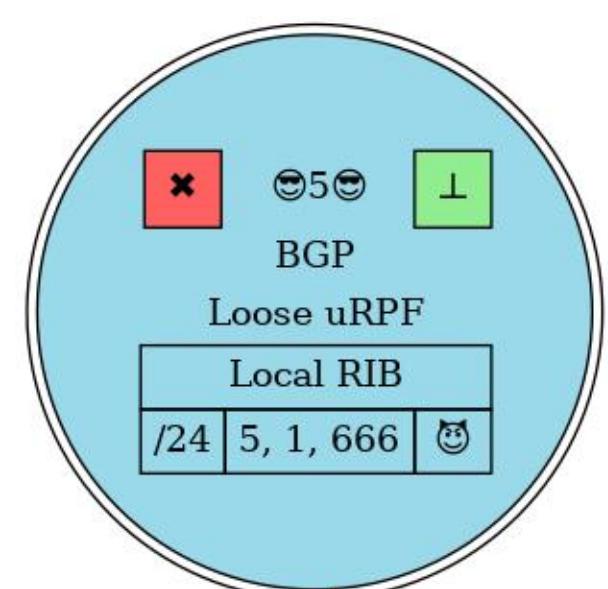
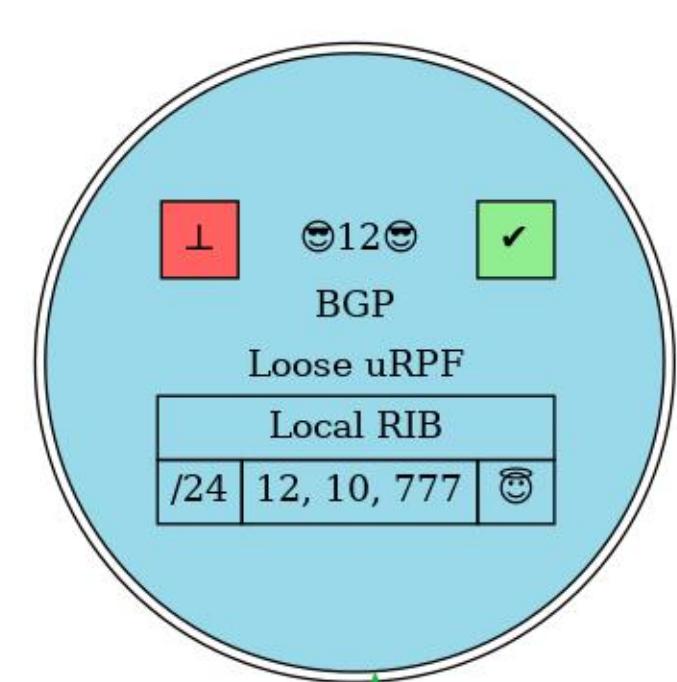
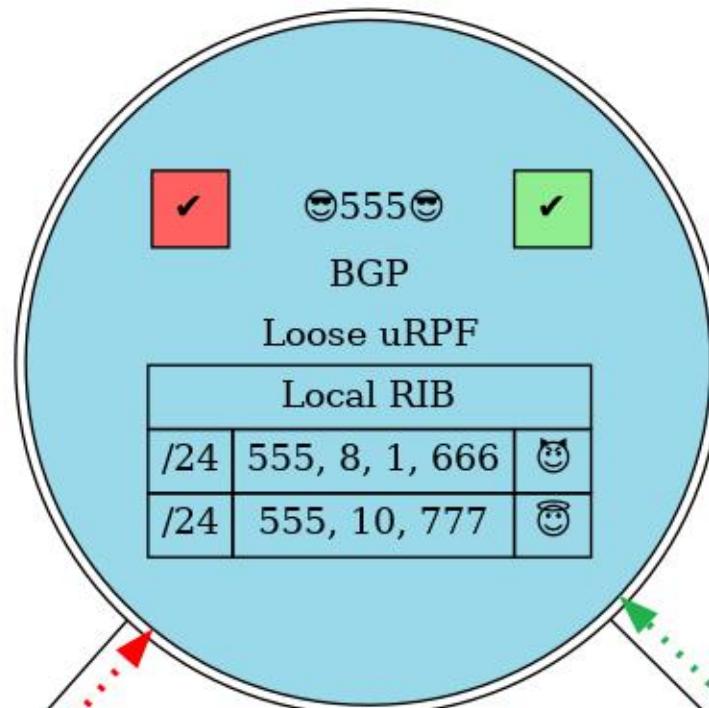
Three reflectors running Loose uRPF, one disconnected from both victim and attacker

(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

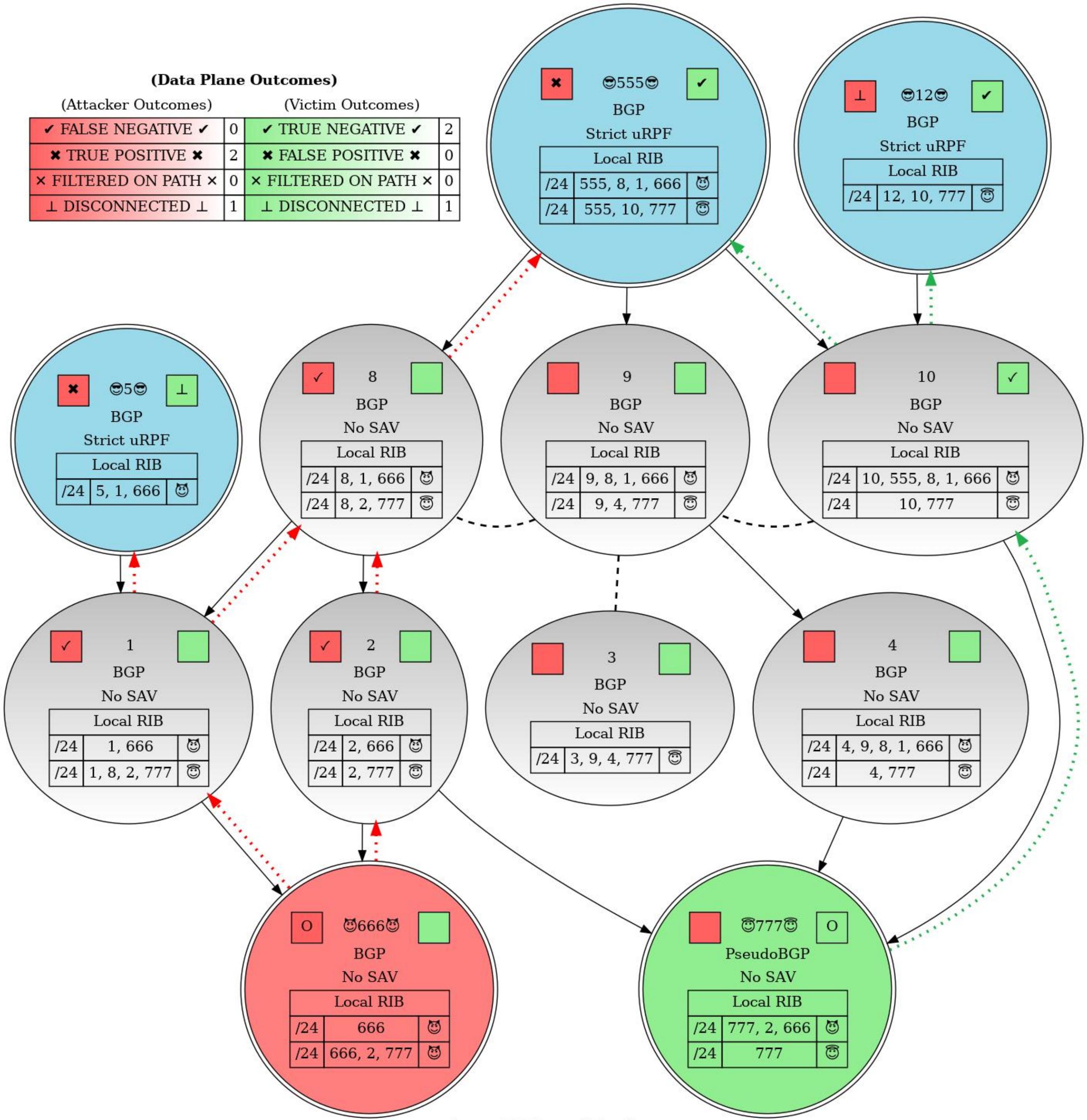
| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 1 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |



(loose_000)

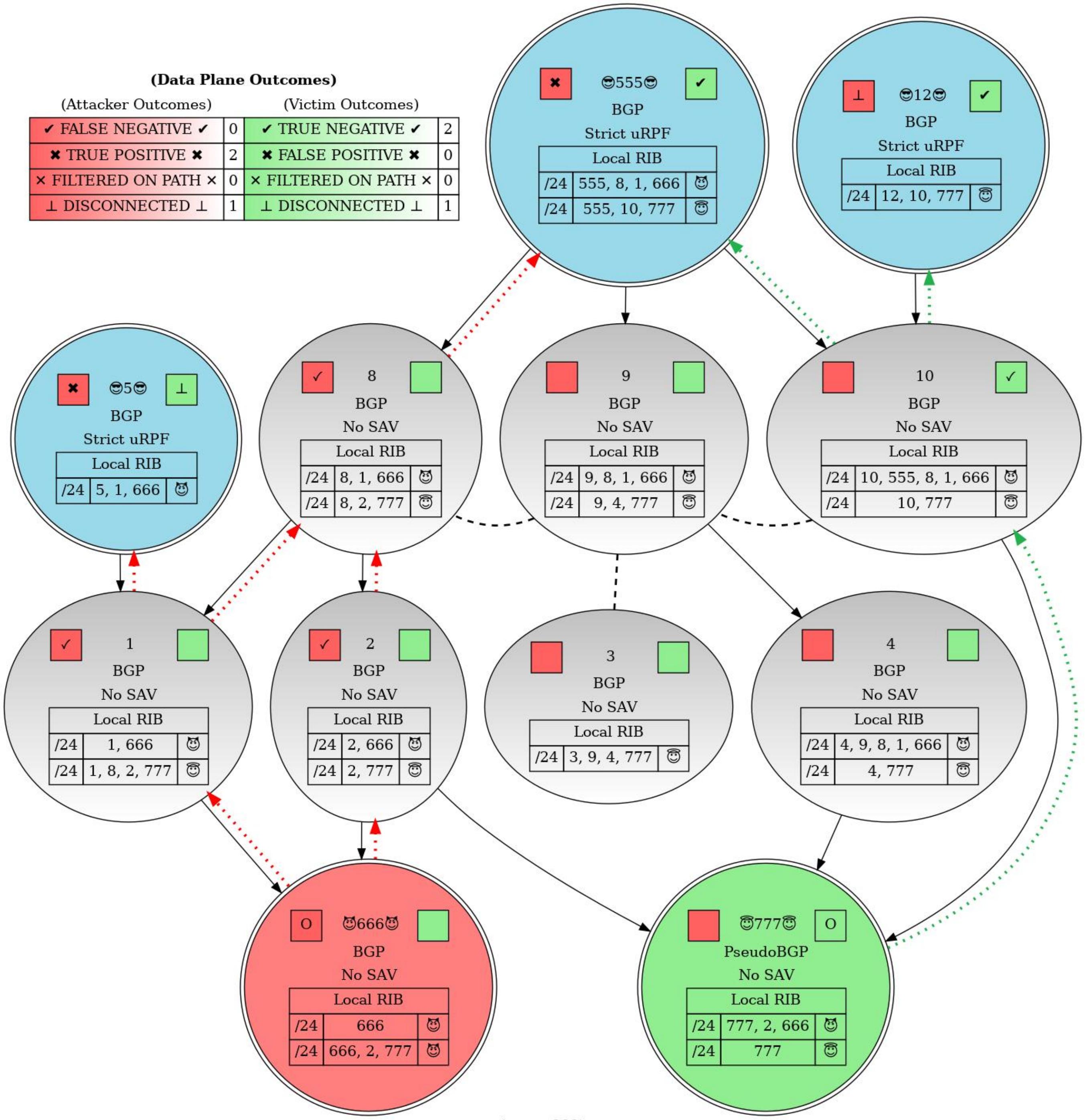
Three reflectors running Loose uRPF, one disconnected from both victim and attacker

| (Data Plane Outcomes) | | | |
|-----------------------|---|----------------------|---|
| (Attacker Outcomes) | | (Victim Outcomes) | |
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 2 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |



(strict 000 Ground Truth)
Three reflectors running Strict uRPF, one disconnected from both victim and attacker

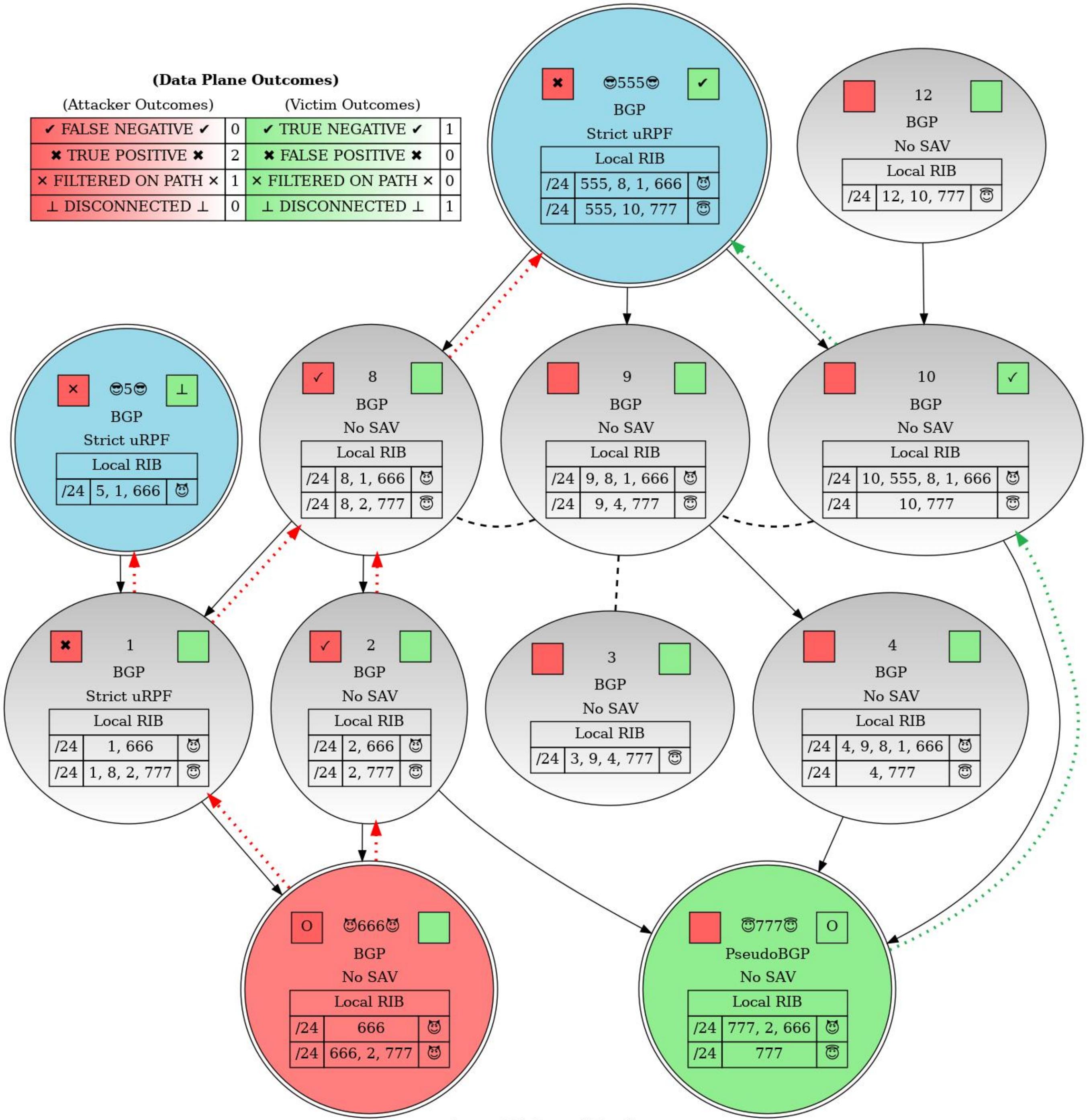
| (Data Plane Outcomes) | | | |
|-----------------------|---|----------------------|---|
| (Attacker Outcomes) | | (Victim Outcomes) | |
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 2 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 1 | ⊥ DISCONNECTED ⊥ | 1 |



(strict_000)
Three reflectors running Strict uRPF, one disconnected from both victim and attacker

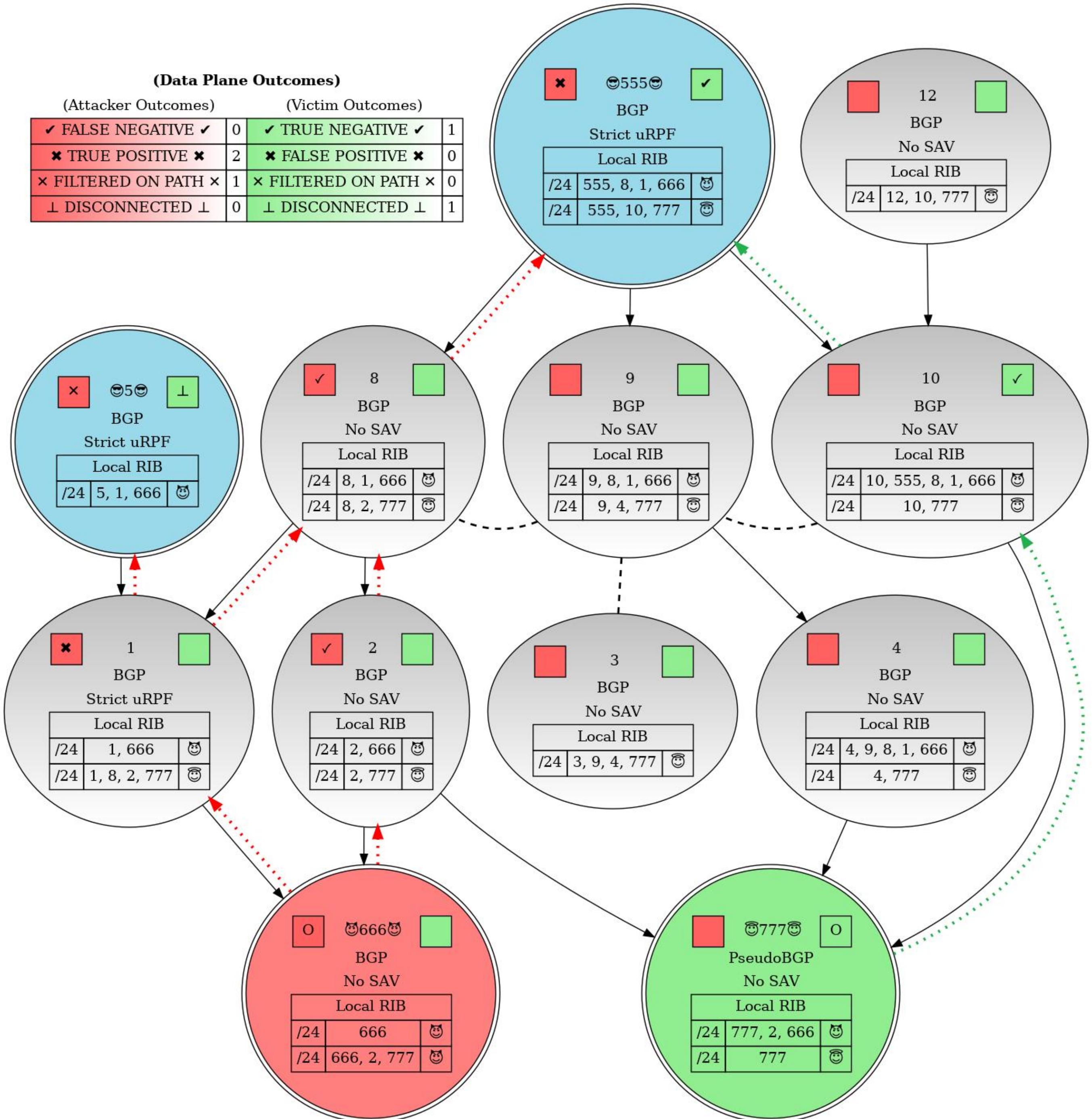
(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 2 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 1 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 1 |



(strict_001 Ground Truth)
Multiple reflectors and transit providers deploying Strict uRPF

| (Data Plane Outcomes) | | | |
|-----------------------|---|----------------------|---|
| (Attacker Outcomes) | | (Victim Outcomes) | |
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 2 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 1 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 1 |



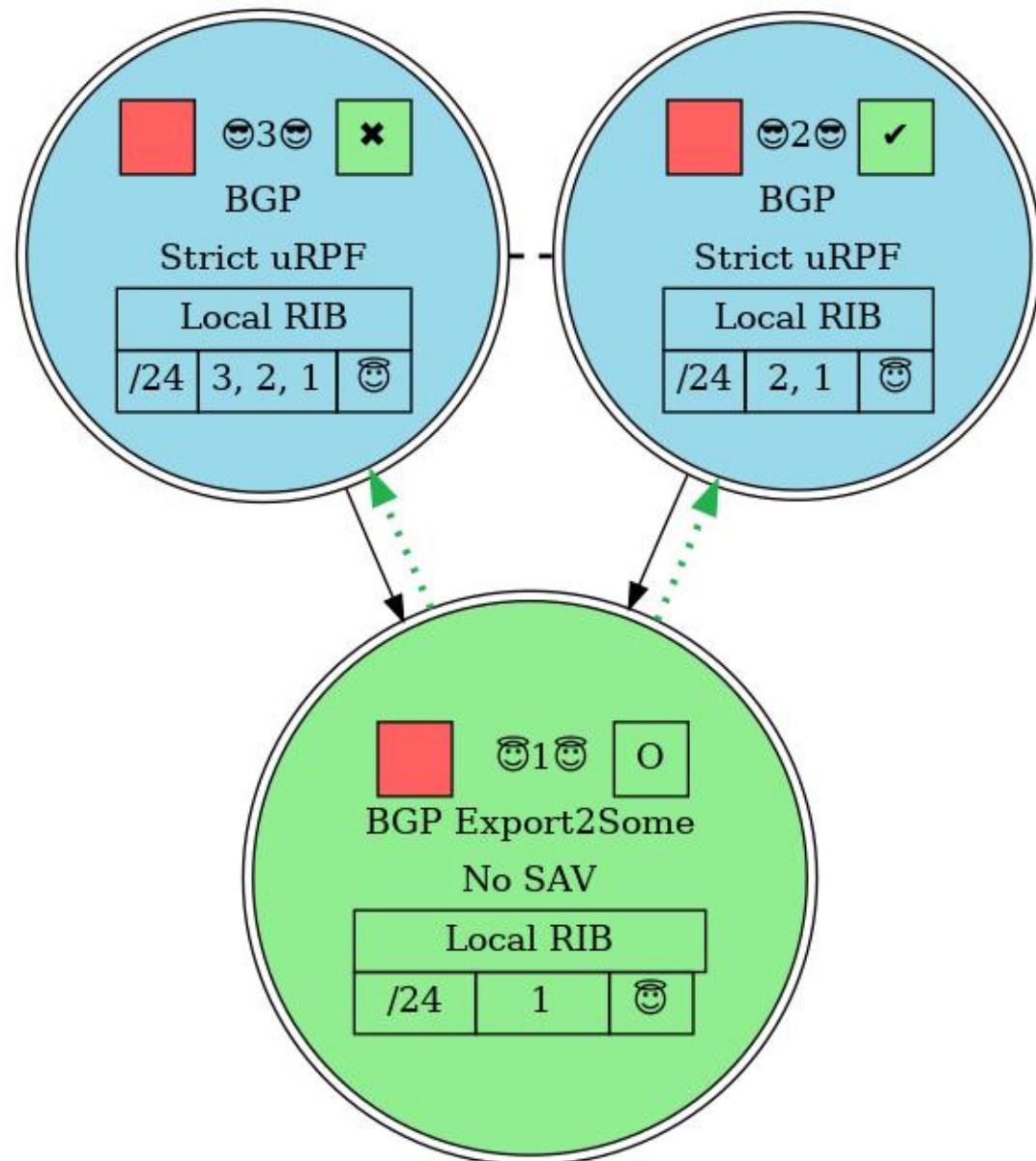
(strict_001)
Multiple reflectors and transit providers deploying Strict uRPF

(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |



(strict_002 Ground Truth)

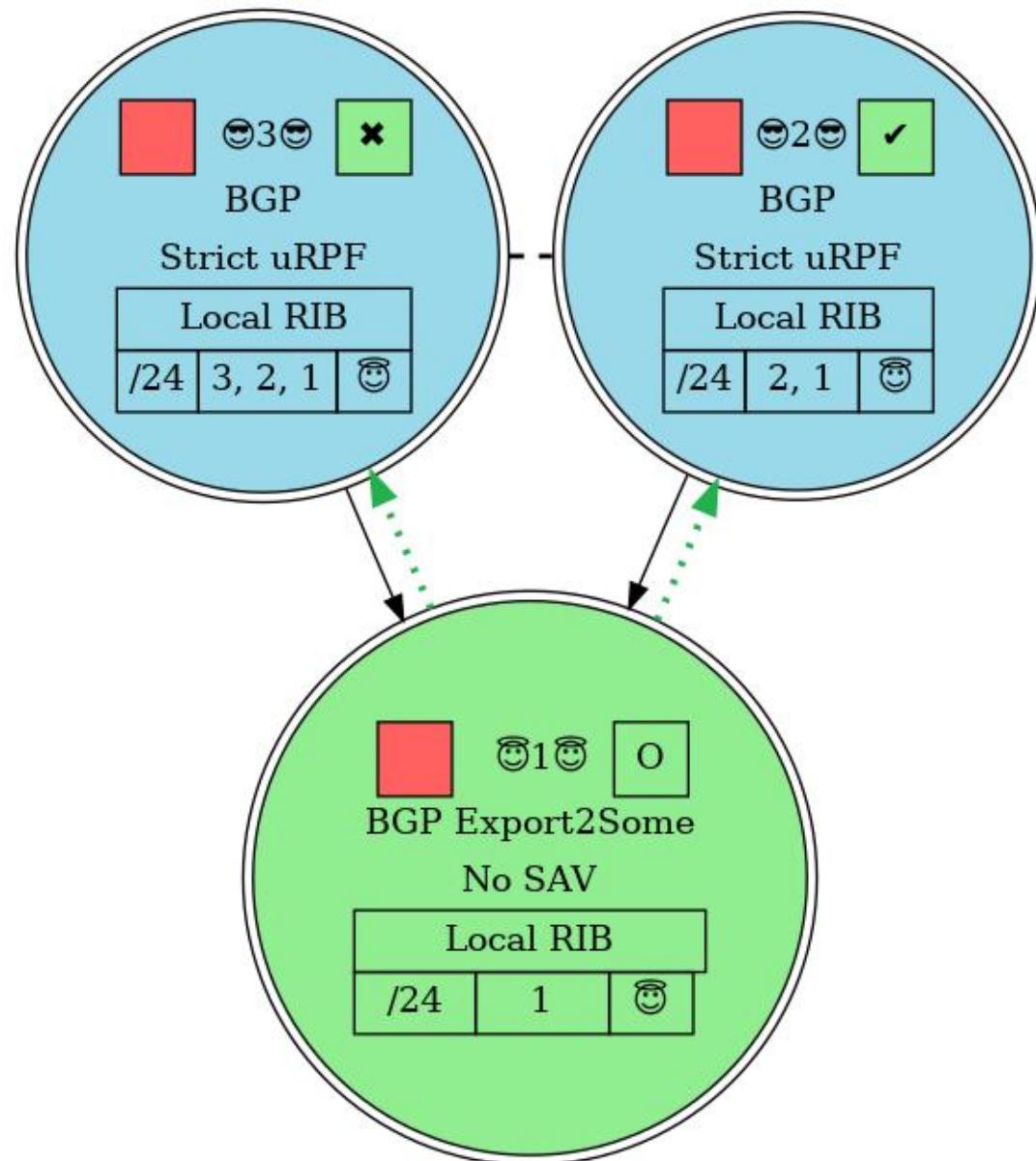
Simple scenario with Export-to-Some and reflectors deploying Strict uRPF

(Data Plane Outcomes)

(Attacker Outcomes)

(Victim Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 0 | ✓ TRUE NEGATIVE ✓ | 1 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |



(strict_002)

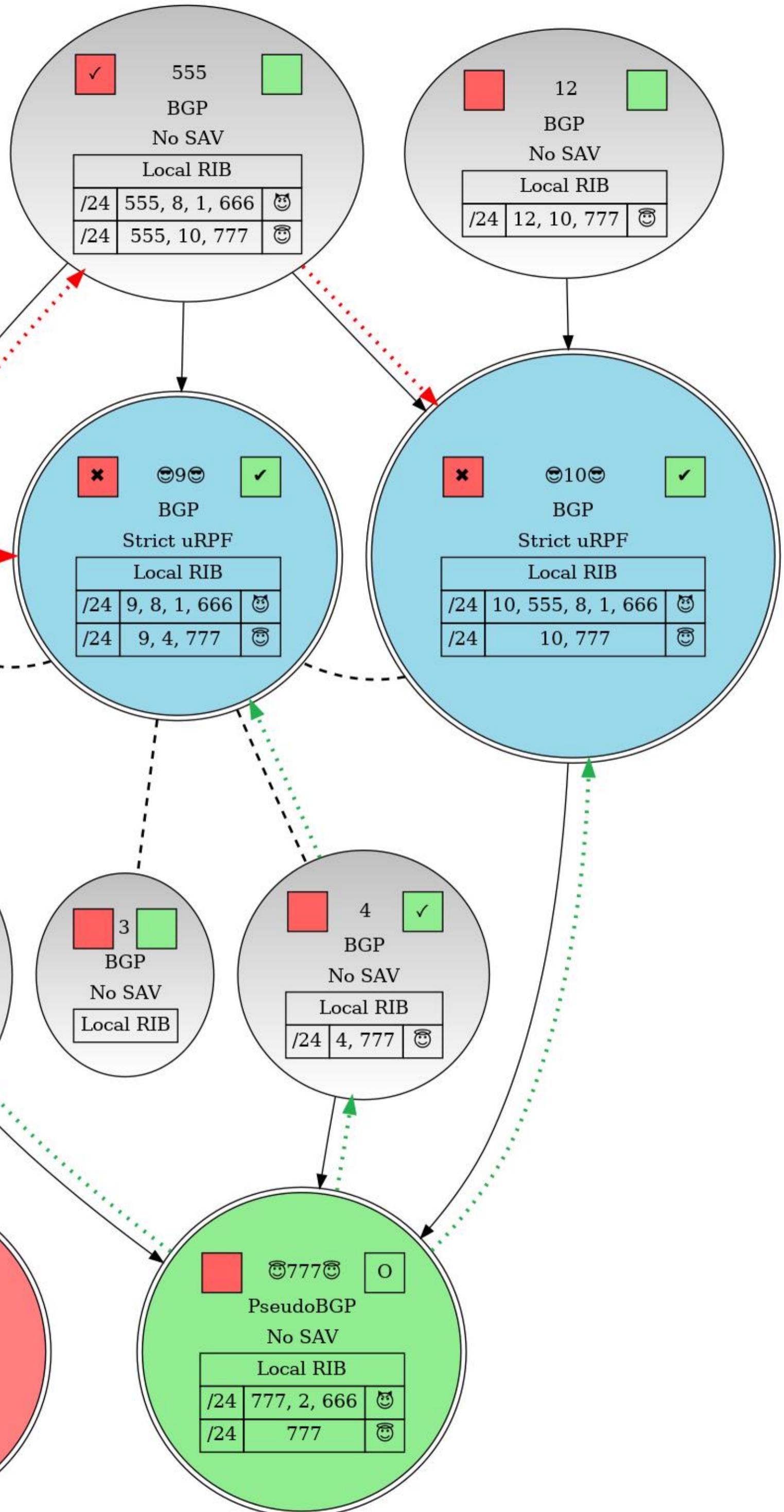
Simple scenario with Export-to-Some and reflectors deploying Strict uRPF

(Data Plane Outcomes)

(Attacker Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 3 |
| ✗ TRUE POSITIVE ✗ | 3 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

(Victim Outcomes)



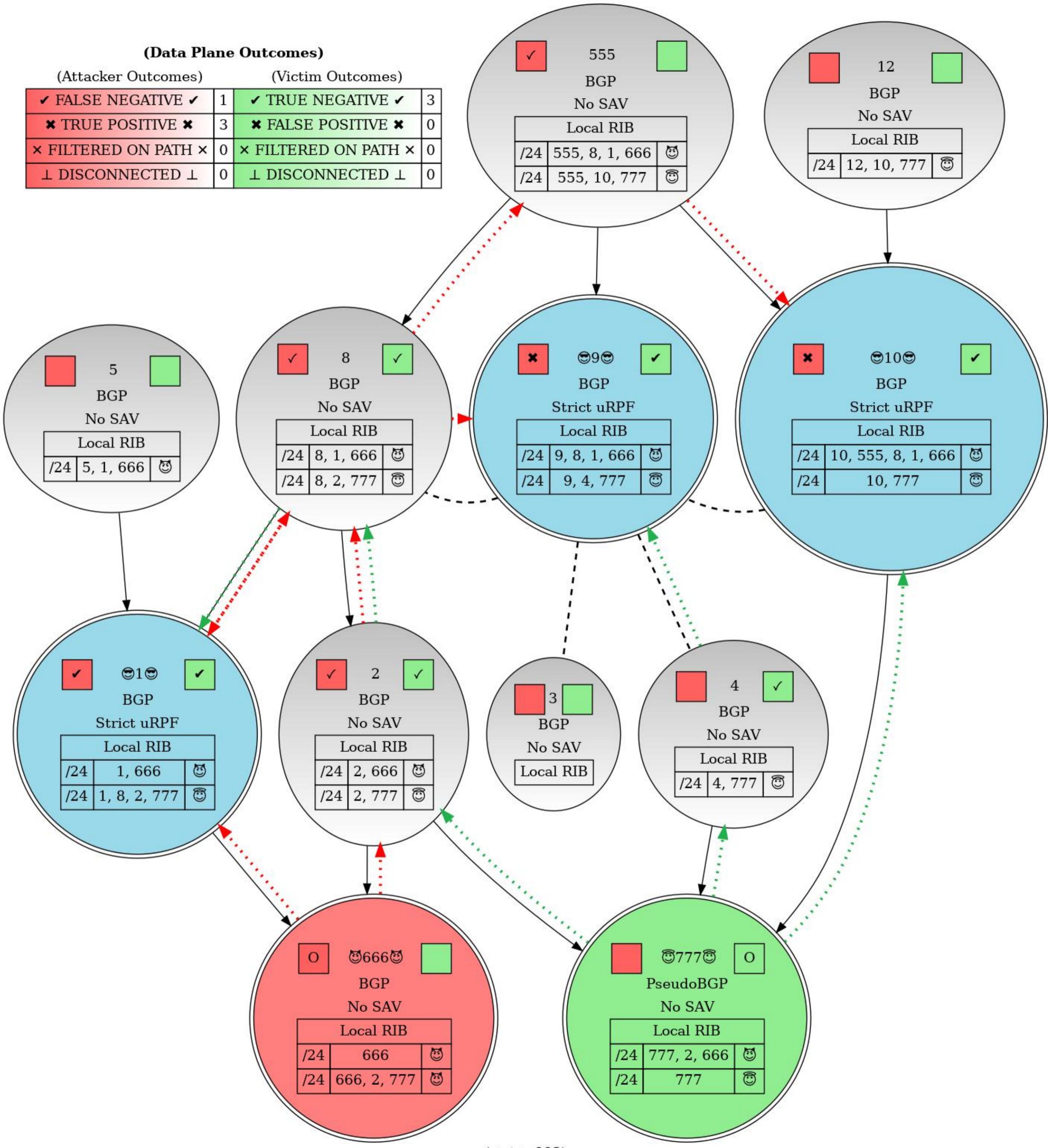
(strict 003 Ground Truth)
Strict uRPF deployed on all interfaces

(Data Plane Outcomes)

(Attacker Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 3 |
| ✗ TRUE POSITIVE ✗ | 3 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

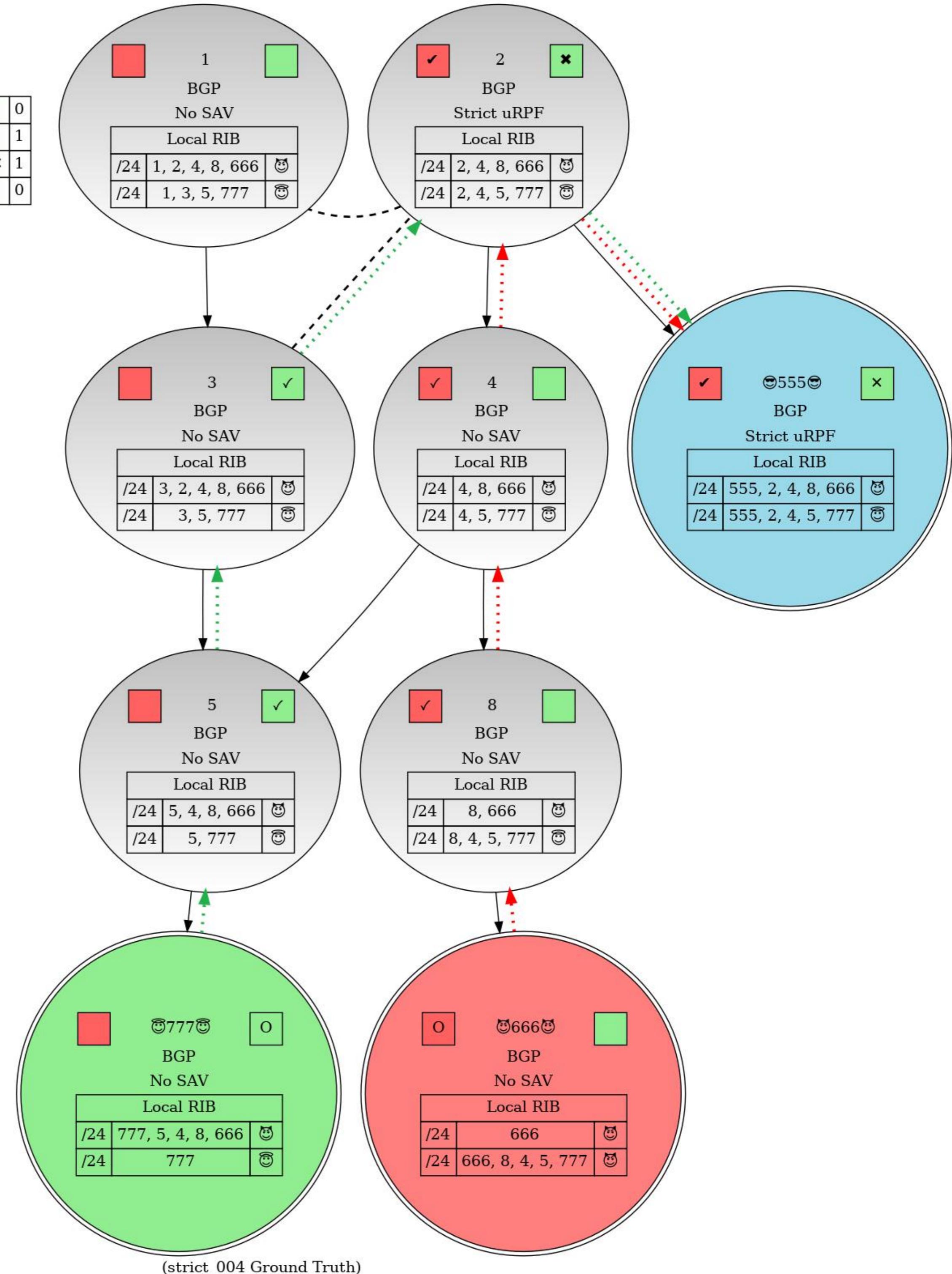
(Victim Outcomes)



(strict_003)
Strict uRPF deployed on all interfaces

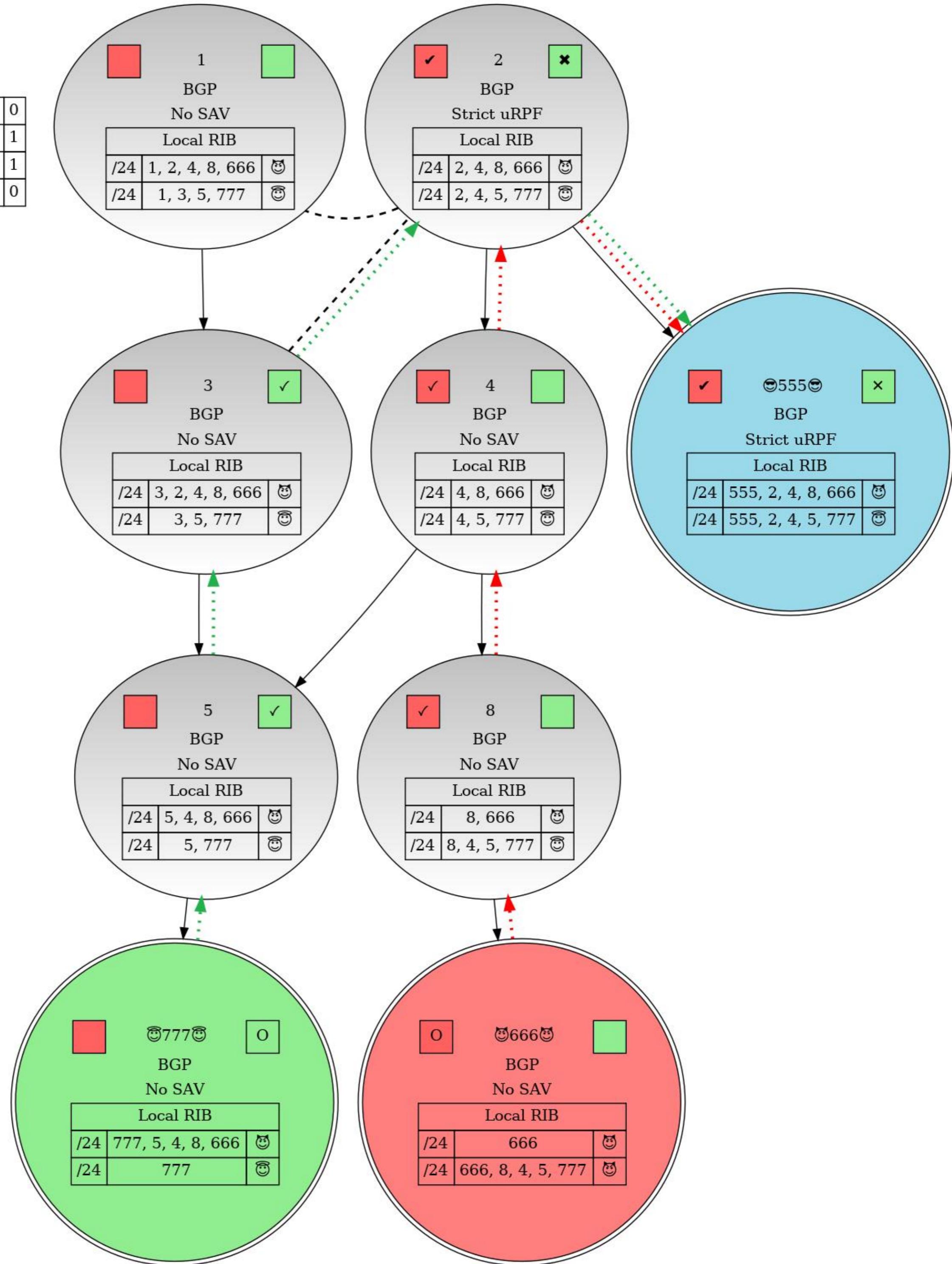
(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 2 | ✓ TRUE NEGATIVE ✓ | 0 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 1 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |



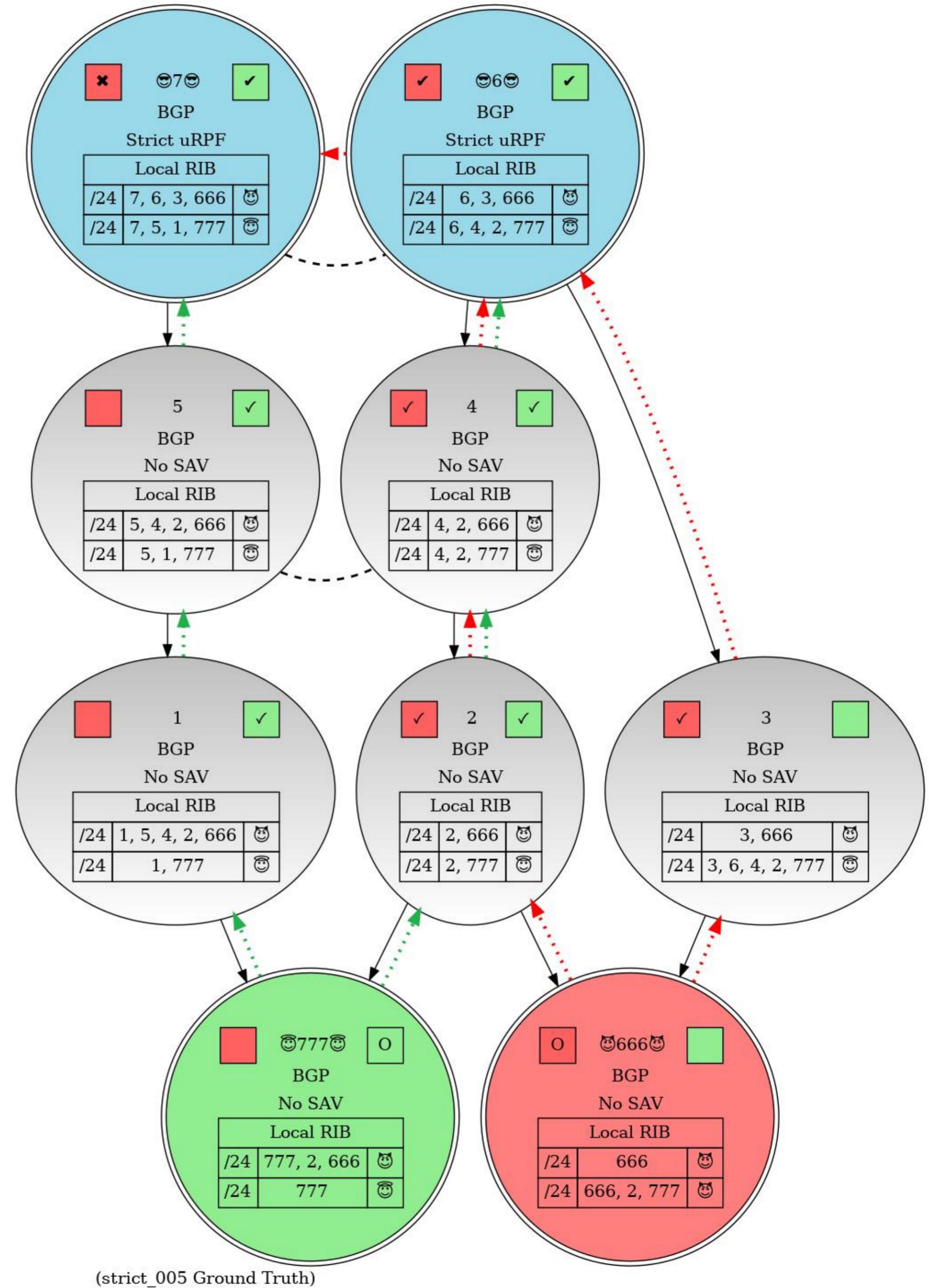
(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 2 | ✓ TRUE NEGATIVE ✓ | 0 |
| ✗ TRUE POSITIVE ✗ | 0 | ✗ FALSE POSITIVE ✗ | 1 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 1 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |



(Data Plane Outcomes)

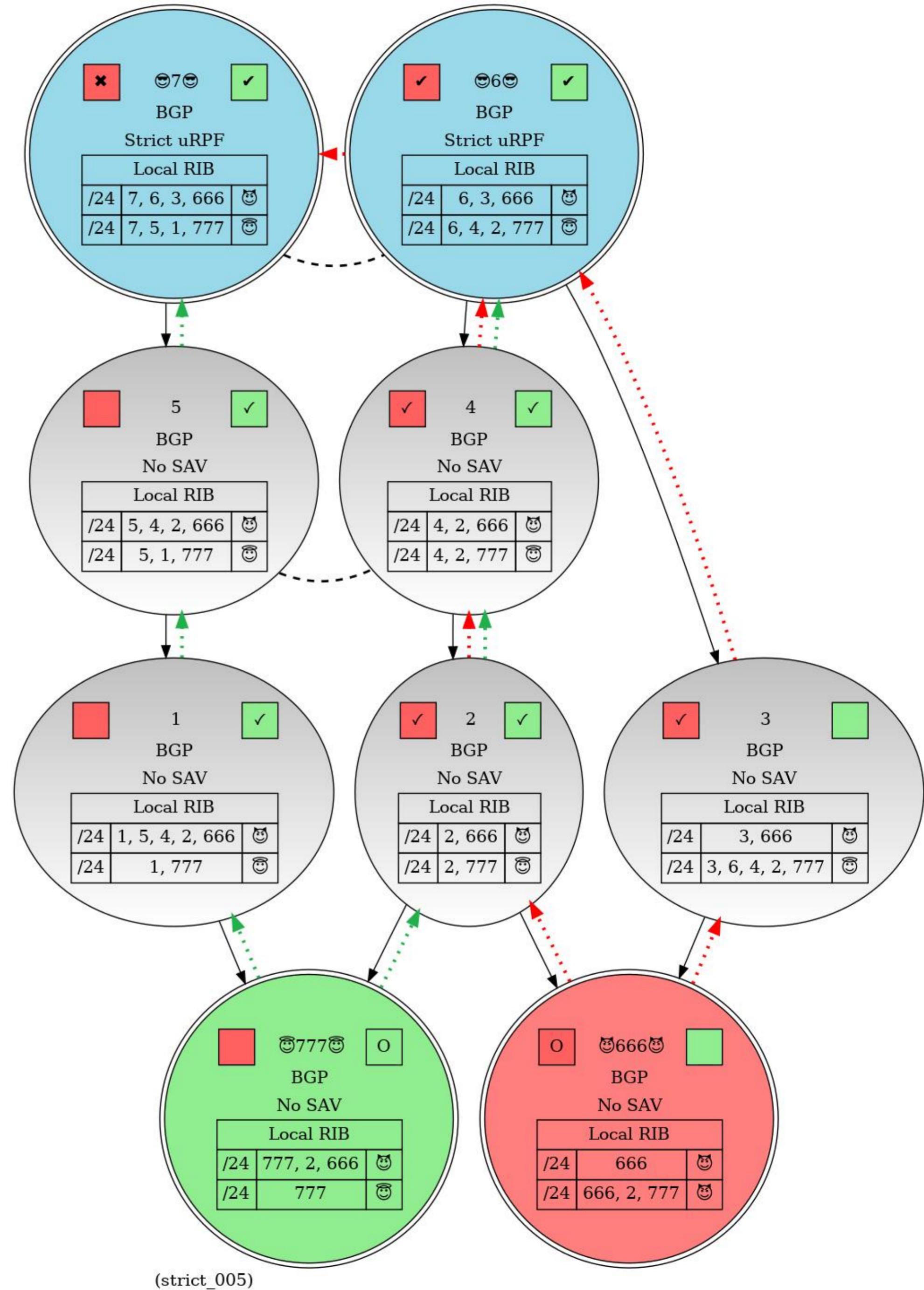
| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 2 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |



(strict_005 Ground Truth)
Strict uRPF

(Data Plane Outcomes)

| (Attacker Outcomes) | | (Victim Outcomes) | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 1 | ✓ TRUE NEGATIVE ✓ | 2 |
| ✗ TRUE POSITIVE ✗ | 2 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |



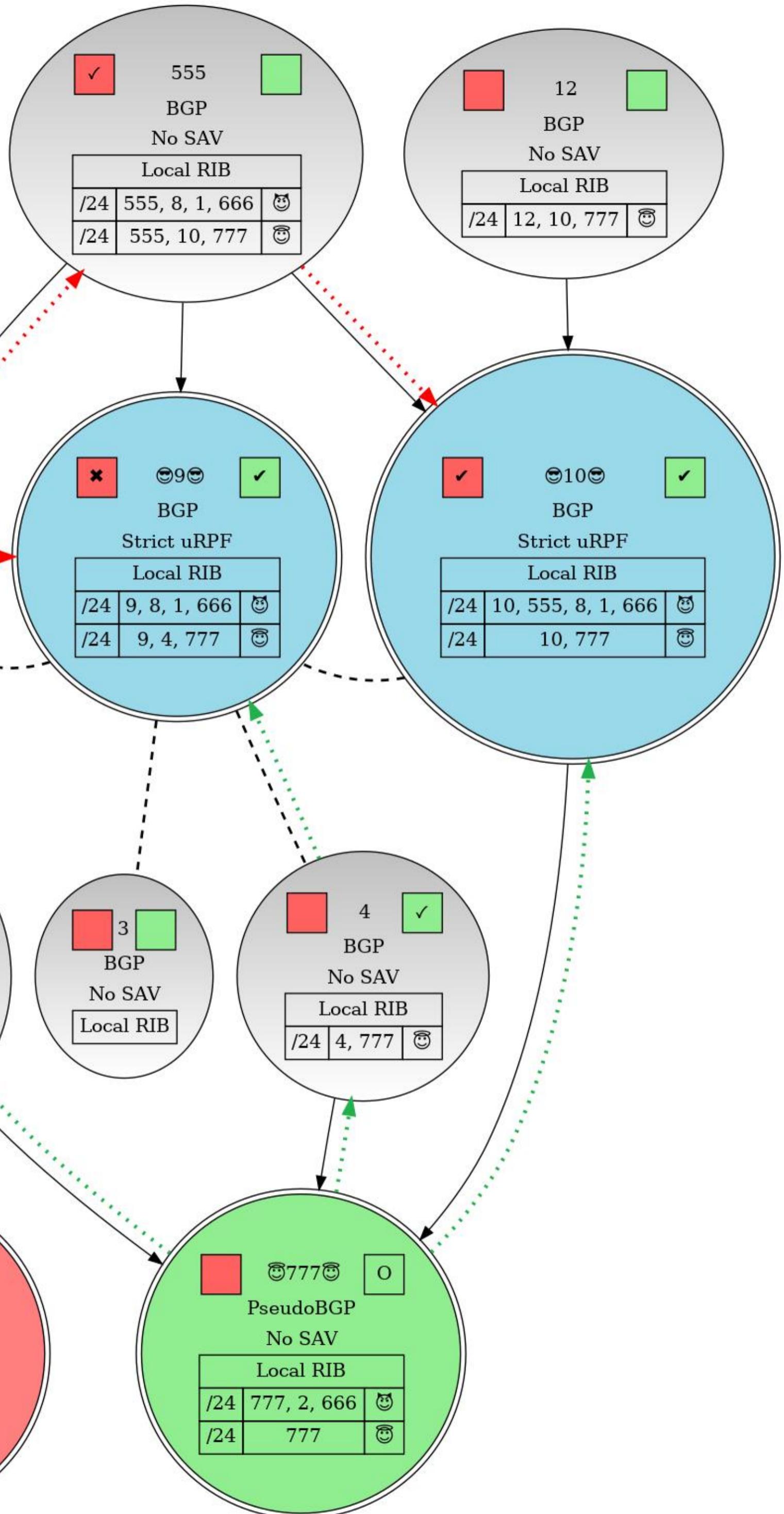
(strict_005)
Strict uRPF

(Data Plane Outcomes)

(Attacker Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 2 | ✓ TRUE NEGATIVE ✓ | 3 |
| ✗ TRUE POSITIVE ✗ | 2 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

(Victim Outcomes)



(strict_006 Ground Truth)

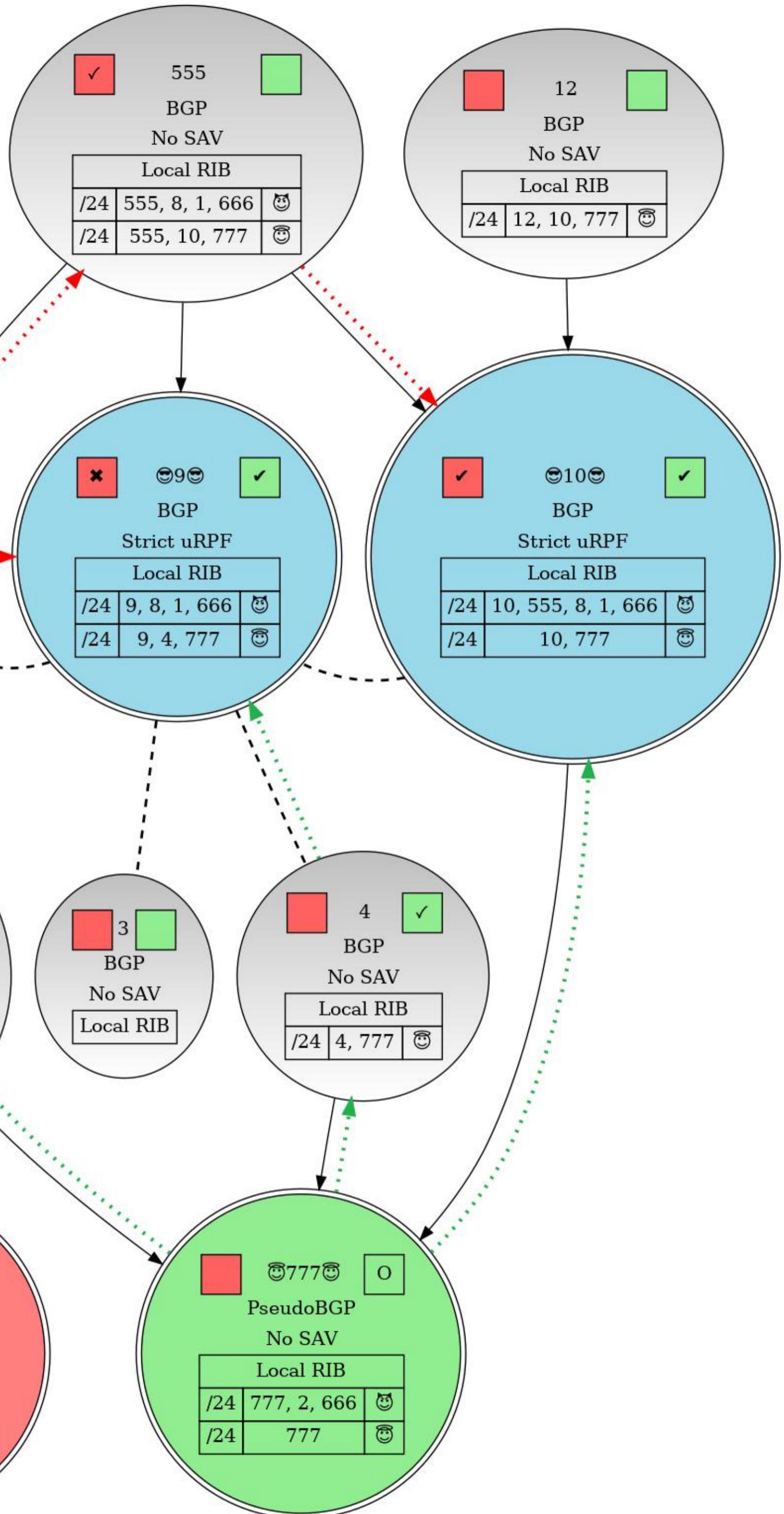
Strict uRPF deployed on default interfaces (customers and peers)

(Data Plane Outcomes)

(Attacker Outcomes)

| | | | |
|----------------------|---|----------------------|---|
| ✓ FALSE NEGATIVE ✓ | 2 | ✓ TRUE NEGATIVE ✓ | 3 |
| ✗ TRUE POSITIVE ✗ | 2 | ✗ FALSE POSITIVE ✗ | 0 |
| ✗ FILTERED ON PATH ✗ | 0 | ✗ FILTERED ON PATH ✗ | 0 |
| ⊥ DISCONNECTED ⊥ | 0 | ⊥ DISCONNECTED ⊥ | 0 |

(Victim Outcomes)



(strict_006)

Strict uRPF deployed on default interfaces (customers and peers)

(Data Plane Outcomes)

(Attacker Outcomes)

✓ FALSE NEGATIVE ✓

0

(Victim Outcomes)

✓ TRUE NEGATIVE ✓

1

✗ TRUE POSITIVE ✗

0

✗ FALSE POSITIVE ✗

1

✗ FILTERED ON PATH ✗

0

✗ FILTERED ON PATH ✗

0

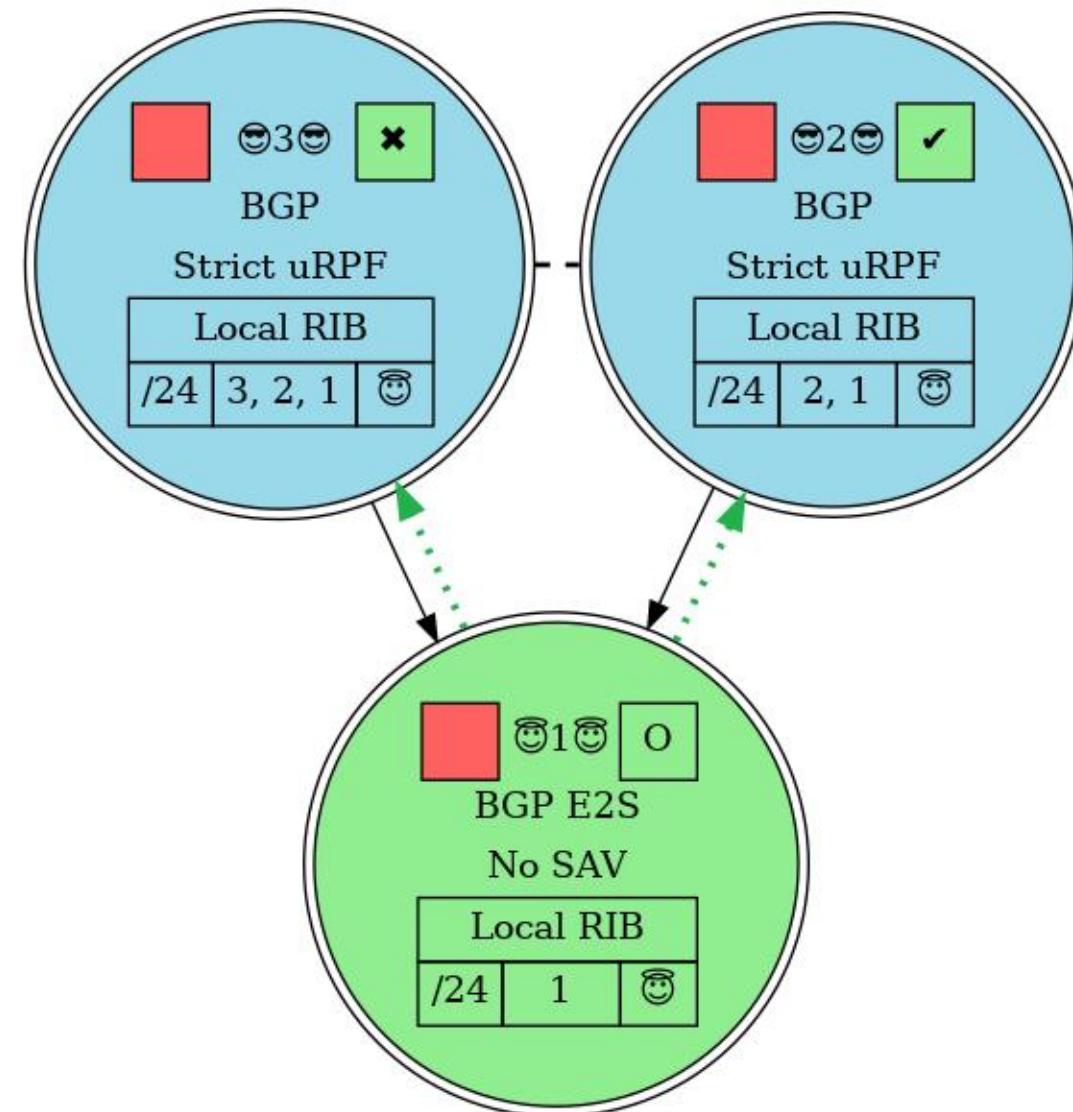
⊥ DISCONNECTED ⊥

0

⊥ DISCONNECTED ⊥

0

ROAs (prefix, origin, max_len)



(strict_007 Ground Truth)
Basic Export to Some

(Data Plane Outcomes)

(Attacker Outcomes)

✓ FALSE NEGATIVE ✓

0

(Victim Outcomes)

✓ TRUE NEGATIVE ✓

1

✗ TRUE POSITIVE ✗

0

✗ FALSE POSITIVE ✗

1

✗ FILTERED ON PATH ✗

0

✗ FILTERED ON PATH ✗

0

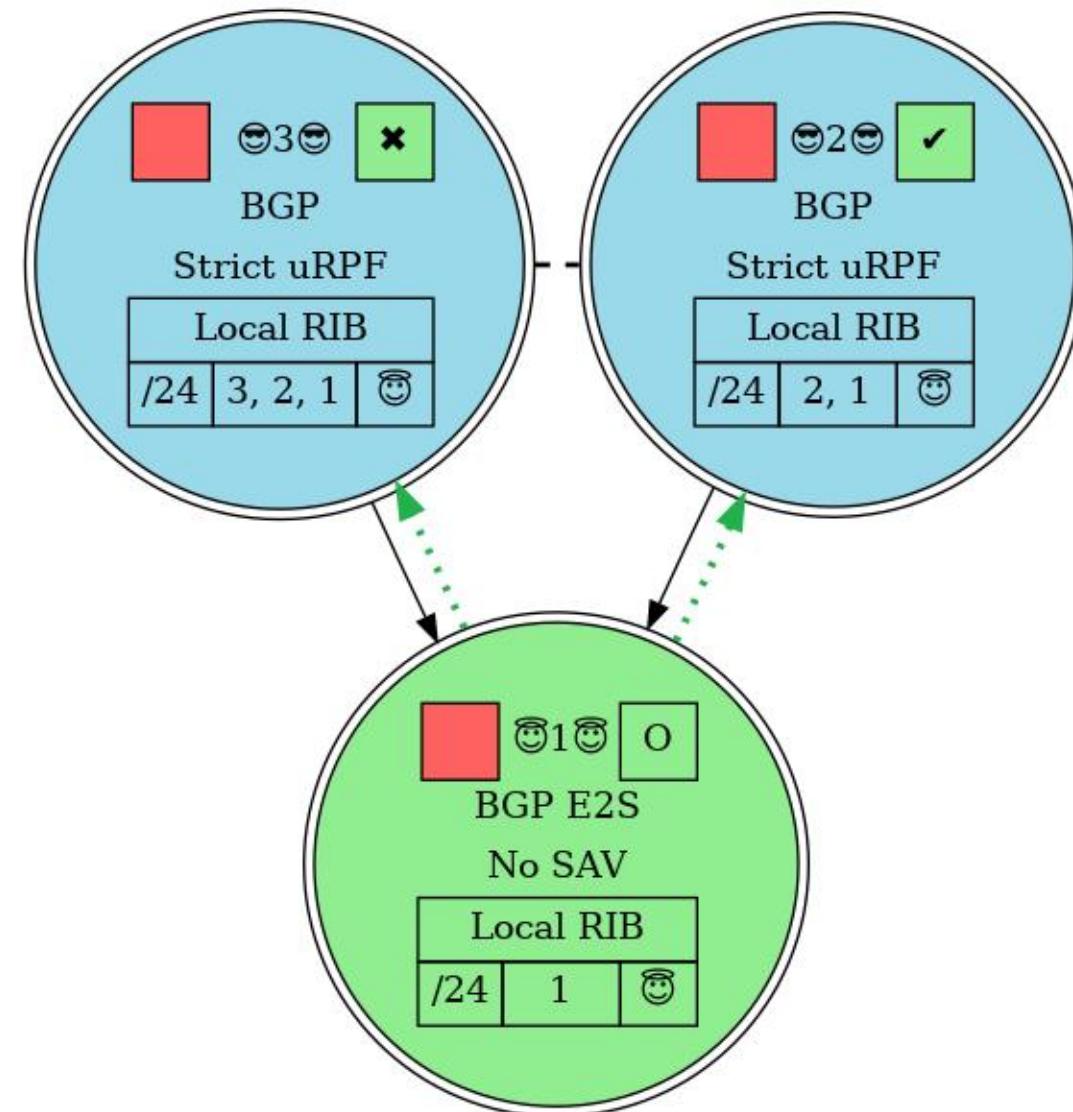
⊥ DISCONNECTED ⊥

0

⊥ DISCONNECTED ⊥

0

ROAs (prefix, origin, max_len)



(strict_007)
Basic Export to Some